CONTRACT PLANS

BRIDGE 405/17.7
RENTON AVE OVER NB I-405

I-405 MP 0.00 TO MP 14.60

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

VOLUME 15
FINAL DESIGN REVIEW

KING COUNTY

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	

Washington State Department of Transportation

12/22/2021

VOLUME 15

REV NO.	INCLUDED	REV. DATE	SUB. NO.	PLAN REF NO.		SHEET TITLE	SHEET DESCRIPTION
0		6/09/21	1387	BG11	1	I-405 OVER SR181/INTERURBAN AVE	BRIDGE LAYOUT
0		6/09/21	1387	BG11	2	I-405 OVER SR181/INTERURBAN AVE	BRIDGE GENERAL NOTES
0		6/09/21	1387	BG11	3	I-405 OVER SR181/INTERURBAN AVE	PIER 1 RETROFIT
0		6/09/21	1387	BG11	4	I-405 OVER SR181/INTERURBAN AVE	PIER 5 RETROFIT
0		6/09/21	1387	BG11	5	I-405 OVER SR181/INTERURBAN AVE	PIER 2 RETROFIT
0		6/09/21	1387	BG11	6	I-405 OVER SR181/INTERURBAN AVE	PIER 3 RETROFIT
0		6/09/21	1387	BG11	7	I-405 OVER SR181/INTERURBAN AVE	PIER 4 RETROFIT
0		6/09/21	1387	BG11	8	I-405 OVER SR181/INTERURBAN AVE	PIER COLUMN RETROFIT
0	X	12/08/21	1280	BR	1	I-405 OVER SR167	PLAN AND ELEVATION
0	X	12/08/21	1280	BR	2	I-405 OVER SR167	GENERAL NOTES
0	X	12/08/21	1280	BR	02A	I-405 OVER SR167	GIRDER STOP LAYOUT
0	X	12/08/21	1280	BR	3	I-405 OVER SR167	BENT 1 PLAN AND ELEVATION
0	X	12/08/21	1280	BR	4	I-405 OVER SR167	BENT 1 DETAILS
0	X	12/08/21	1280	BR	5	I-405 OVER SR167	BENTS 2 - 4 PLAN AND ELEVATION
0	X	12/08/21	1280	BR	6	I-405 OVER SR167	BENTS 2-4 RETROFIT DETAILS
0	X	12/08/21	1280	BR	7	I-405 OVER SR167	BENT 5 PLAN AND ELEVATION
0	X	12/08/21	1280	BR	8	I-405 OVER SR167	BENT 5 DETAILS
0	X	12/08/21	1280	BR	9	I-405 OVER SR167	RETROFIT DETAILS
0		44473	1004	BG5	1	BRIDGE 5 61 ST AVE S OVER I-405	BRIDGE PLAN AND ELEVATION
0		44473	1004	BG5	2	BRIDGE 5 61 ST AVE S OVER I-405	PIER 1 & 3 ABUTMENT GIRDER STOP
0		44473	1004	BG5	3	BRIDGE 5 61 ST AVE S OVER I-405	PIER 1 & 3 ABUTMENT GIRDER STOP DETAILS -1
0		44473	1004	BG5	4	BRIDGE 5 61 ST AVE S OVER I-405	PIER 1 & 3 ABUTMENT GIRDER STOP DETAILS -2
0		44473	1004	BG5	5	BRIDGE 5 61 ST AVE S OVER I-405	PIER 2 CAPBEAM BOLSTER
0		44473	1004	BG5	6	BRIDGE 5 61 ST AVE S OVER I-405	PIER 2 CAPBEAM BOLSTER DETAILS -1
0		44473	1004	BG5	7	BRIDGE 5 61 ST AVE S OVER I-405	PIER 2 CAPBEAM BOLSTER DETAILS -2
0		44473	1004	BG5	8	BRIDGE 5 61 ST AVE S OVER I-405	PIER 2 COLUMN RETROFIT DETAILS
E		12/22/21	FINAL	BG17.7	1	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	BRIDGE LAYOUT
E		12/22/21	FINAL	BG17.7	2	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	BRIDGE GENERAL NOTES
E		12/22/21	FINAL	BG17.7	3	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONSTRUCTION SEQUENCE
E		12/22/21	FINAL	BG17.7	4	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	DEMOLITION DETAILS

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

REV NO.	INCLUDED	REV. DATE	SUB. NO.	PLAN REF NO.		SHEET TITLE	SHEET DESCRIPTION
E		12/22/21	FINAL	BG17.7	5	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	FOUNDATION LAYOUT
E		12/22/21	FINAL	BG17.7	6	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	PIER 1 PLAN AND ELEVATION
E		12/22/21	FINAL	BG17.7	7	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	PIER 1 DETAILS 1 OF 3
E		12/22/21	FINAL	BG17.7	8	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	PIER 1 DETAILS 2 OF 3
E		12/22/21	FINAL	BG17.7	9	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	PIER 1 DETAILS 3 OF 3
E		12/22/21	FINAL	BG17.7	10	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	FRAMING PLAN
E		12/22/21	FINAL	BG17.7	11	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	TYPICAL SECTION
E		12/22/21	FINAL	BG17.7	12	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 1 OF 13
E		12/22/21	FINAL	BG17.7	13	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 2 OF 13
E		12/22/21	FINAL	BG17.7	14	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 3 OF 13
E		12/22/21	FINAL	BG17.7	15	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 4 OF 13
E		12/22/21	FINAL	BG17.7	16	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 5 OF 13
E		12/22/21	FINAL	BG17.7	17	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 6 OF 13
E		12/22/21	FINAL	BG17.7	18	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 7 OF 13
E		12/22/21	FINAL	BG17.7	19	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 8 OF 13
E		12/22/21	FINAL	BG17.7	20	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 9 OF 13
E		12/22/21	FINAL	BG17.7	21	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 10 OF 13
E		12/22/21	FINAL	BG17.7	22	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 11 OF 13
E		12/22/21	FINAL	BG17.7	23	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 12 OF 13
E		12/22/21	FINAL	BG17.7	24	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	CONCRETE BOX DETAILS 13 OF 13
E		12/22/21	FINAL	BG17.7	25	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	POST-TENSIONING LAYOUT
E		12/22/21	FINAL	BG17.7	26	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	POST-TENSIONING DETAILS
E		12/22/21	FINAL	BG17.7	27	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	UTILITY SUPPORTS
E		12/22/21	FINAL	BG17.7	28	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	BARRIER DETAILS 1 OF 4
E		12/22/21	FINAL	BG17.7	29	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	BARRIER DETAILS 2 OF 4
E		12/22/21	FINAL	BG17.7	30	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	BARRIER DETAILS 3 OF 4
E		12/22/21	FINAL	BG17.7	31	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	BARRIER DETAILS 4 OF 4
E		12/22/21	FINAL	BG17.7	32	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	APPROACH SLABS 1 OF 4
E		12/22/21	FINAL	BG17.7	33	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	APPROACH SLABS 2 OF 4
E		12/22/21	FINAL	BG17.7	34	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	APPROACH SLABS 3 OF 4
E		12/22/21	FINAL	BG17.7	35	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	APPROACH SLABS 4 OF 4
E		12/22/21	FINAL	BG17.7	36	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	BP-24 BRIDGE RAILING 1 OF 2
E		12/22/21	FINAL	BG17.7	37	BRIDGE 405/17.7 - RENTON AVENUE OVER I-405	BP-24 BRIDGE RAILING 2 OF 2
E		12/22/21	FINAL	W03.66L	1	RENTON AVENUE OVER I-405	RETAINING WALL 03.66L 1 OF 2
E		12/22/21	FINAL	W03.66L	2	RENTON AVENUE OVER I-405	RETAINING WALL 03.66L 2 OF 2
0		09/21/21	1726	BG18W	1	SB I-405 OVER CEDAR RIVER	BRIDGE LAYOUT
0		09/21/21	1726	BG18W	2	SB I-405 OVER CEDAR RIVER	BRIDGE GENERAL NOTES
0		09/21/21	1726	BG18W	3	SB I-405 OVER CEDAR RIVER	STAGED CONSTRUCTION
0		09/21/21	1726	BG18W	4	SB I-405 OVER CEDAR RIVER	DEMOLITION DETAILS
0		09/21/21	1726	BG18W	5	SB I-405 OVER CEDAR RIVER	PIER 1 PLAN AND ELEVATION
0		09/21/21	1726	BG18W	6	SB I-405 OVER CEDAR RIVER	PIER 1 DETAILS 1
0		09/21/21	1726	BG18W	7	SB I-405 OVER CEDAR RIVER	PIER 2 PLAN AND ELEVATION
0		09/21/21	1726	BG18W	8	SB I-405 OVER CEDAR RIVER	PIER 2 DETAILS 1
0		09/21/21	1726	BG18W	9	SB I-405 OVER CEDAR RIVER	BEARING DETAILS
0		09/21/21	1726	BG18W	10	SB I-405 OVER CEDAR RIVER	FRAMING PLAN
0		09/21/21	1726	BG18W	11	SB I-405 OVER CEDAR RIVER	TYPICAL SECTIONS
0		09/21/21	1726	BG18W	12	SB I-405 OVER CEDAR RIVER	STEEL GIRDER DETAILS 1 OF 3
0		09/21/21	1726	BG18W	13	SB I-405 OVER CEDAR RIVER	STEEL GIRDER DETAILS 2 OF 3
0		09/21/21	1726	BG18W	14	SB I-405 OVER CEDAR RIVER	STEEL GIRDER DETAILS 3 OF 3
0		09/21/21	1726	BG18W	15	SB I-405 OVER CEDAR RIVER	CROSS FRAME DETAILS 1 OF 2
0		09/21/21	1726	BG18W	16	SB I-405 OVER CEDAR RIVER	CROSS FRAME DETAILS 2 OF 2
0		09/21/21	1726	BG18W	17	SB I-405 OVER CEDAR RIVER	GIRDER CAMBER DIAGRAM
0		09/21/21	1726	BG18W	18	SB I-405 OVER CEDAR RIVER	DECK PLAN
0		09/21/21	1726	BG18W	21	SB I-405 OVER CEDAR RIVER	DECK DETAILS 3 OF 3

NO.	ISSUE DATE	ISSUE RECORD - DESCRIPTION	DESIGNED BY	ENTERED BY	CHECKED BY	DESIGN MANAGER:
E	12/22/2021	FINAL WSDOT SUBMITTAL	BH	KB	MB	BB

REGION NO.	STATE
10	WASH

CONTRACT NO.
C9242

DATE
P.E. STAMP BOX

DATE
P.E. STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood.

I-405
RENTON TO BELLEVUE
EXPRESS TOLL LANES

INDEX OF SHEETS - VOL 15

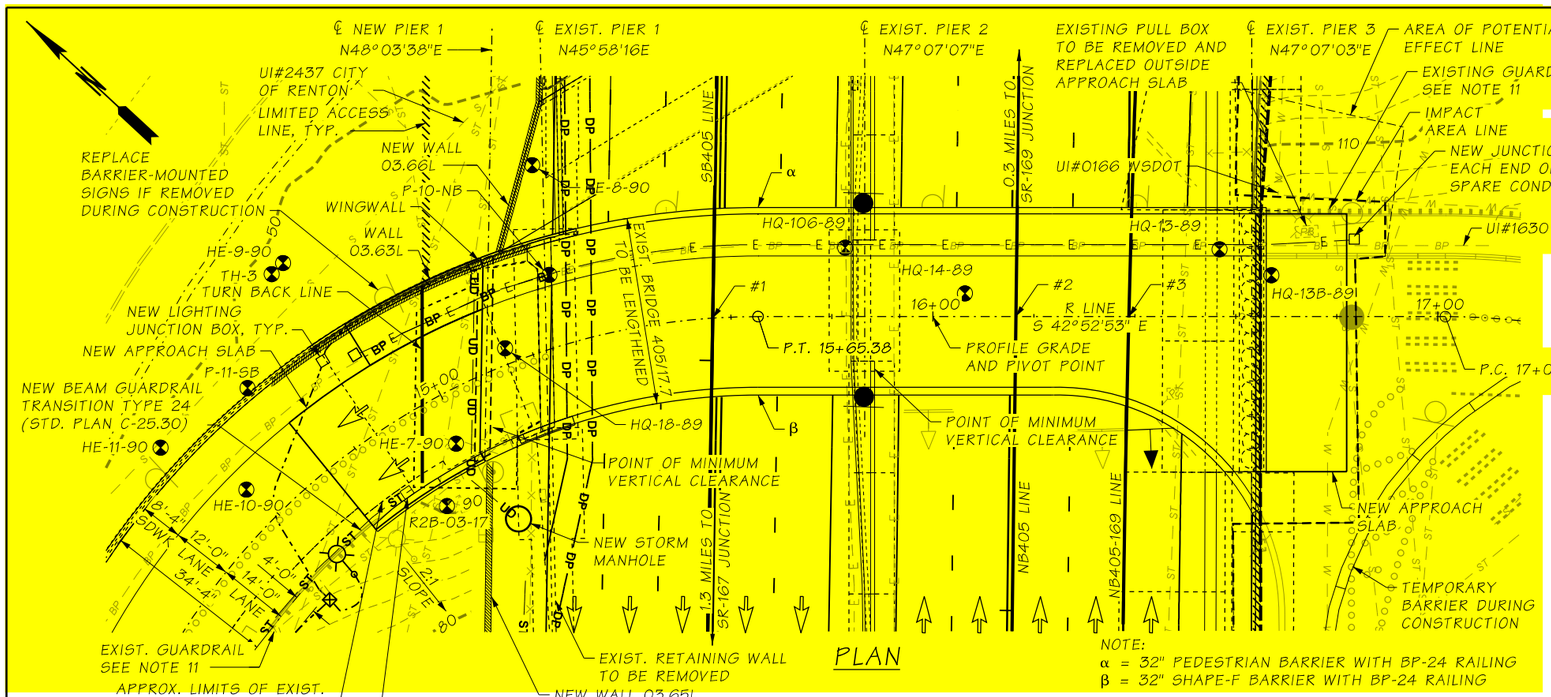
PLAN REF NO
IN15-1

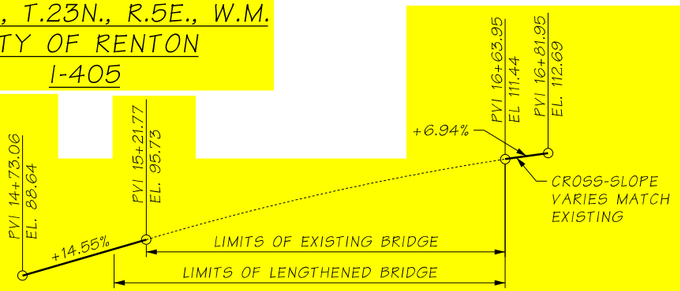
PT. OF MIN. VERT. CLR. SPAN 2
R-LINE STA. 15+68.99 (8.88' RT.)
405NB STA. 7493+49.00 (27.34' LT.)

PT. OF MIN. VERT. CLR. SPAN 1
R-LINE STA. 15+08.84 (8.88' RT.)
4055B STA. 5497+88.24 (42.00' LT.)

BRIDGE BEFORE APPROACH FILLS
51' CIP BOX GIRDER
BRIDGE DECK PROTECTION SYSTEM = TYPE 1
CAST-IN-PLACE CONCRETE STRENGTH PER GENERAL NOTES

I-405 FILE NO. 9242 SHEET





R-LINE PROFILE

EACH PVI IS TO MATCH EXISTING

R LINE CURVE DATA						
P.I. STATION	DELTA	RADIUS	TANGENT	LENGTH	S	BACK TANGENT
14+88.89	84°34'41" RT	135.00'	122.79'	199.28'	0.04'/FT	N52°32'26"E

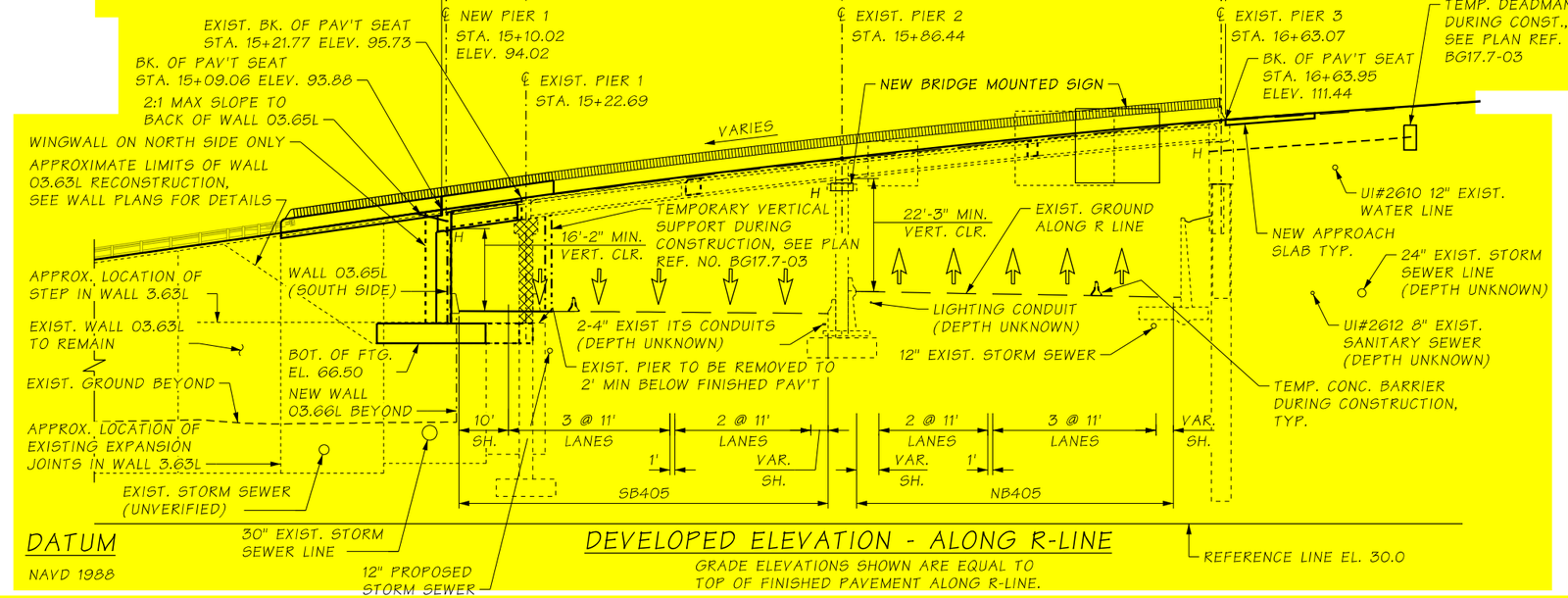
LEGEND:

- TEST BORING
- NEW RETAINING WALL
- NEW LIGHT POLE
- EXIST. LIGHT POLE
- EXIST. CONDUIT
- EXIST. BURIED POWER
- EXIST. WATER LINE
- EXIST. SANITARY SEWER
- EXIST. STORM SEWER
- NEW SPARE CONDUIT
- NEW UNDERDRAIN
- NEW DRAIN PIPE
- NEW BURIED POWER
- NEW STORM SEWER
- NEW CATCH BASIN
- EXIST. CATCH BASIN
- EXIST. BARRIER MOUNTED SIGN
- EXIST. BRIDGE MOUNTED SIGN (TO BE REMOVED)
- NEW BRIDGE MOUNTED SIGN

No.	Date

CHECK PRINT
Dwg. Only: Checked against calcs. and specs.
Confirmed by _____ Date _____

Originator	PSW	12/21/2021
Checker	MWBM	12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date



DATUM

NAVD 1988

DEVELOPED ELEVATION - ALONG R-LINE

GRADE ELEVATIONS SHOWN ARE EQUAL TO TOP OF FINISHED PAVEMENT ALONG R-LINE.

INTERSECTION EQUATIONS:

#1	R-LINE STA 15+56.40 = SB405 STA 5498+08.42	INTERSECTION ANGLE = 85°14'59"
#2	R-LINE STA 16+16.45 = NB405 STA 7493+58.23	INTERSECTION ANGLE = 89°17'42"
#3	R-LINE STA 16+38.81 = NB405-169 STA 493+61.74	INTERSECTION ANGLE = 88°36'13"

NOTES:

1. EXISTING DIMENSIONS SHOWN ARE BASED ON RECORD PLANS AND SHALL BE FIELD VERIFIED.
2. FOR PAVEMENT MARKINGS, SEE PLAN REF. NO. MK-14.
3. FOR RETAINING WALLS 03.63L AND 03.65L, SEE PLAN REF. NO. W86-1 AND W83-1, RESPECTIVELY. RETAINING WALL 03.66L INCLUDED IN BRIDGE 405/17.7 PACKAGE.
4. FOR DRAINAGE, SEE PLAN REF. NO. DR-14. RETAINING WALL 03.66L INCLUDED IN BRIDGE 405/17.7 PACKAGE.
5. FOR UTILITIES, SEE PLAN REF. NO. UT-14.
6. FOR LIGHTING, SEE PLAN REF. NO. IL-14.
7. FOR SIGNS AND SIGN STRUCTURES, SEE PLAN REF. NO. SN-14 & ST-078, RESPECTIVELY.
8. FOR MAINTENANCE OF TRAFFIC, SEE PLAN REF. NO. MOT-14.
9. FOR ITS, SEE PLAN REF. NO. TS-14.
10. R-LINE PROVIDED FOR BRIDGE CONSTRUCTION ONLY AND DOES NOT MATCH RNT LINE USED FOR ROADWAY AND OTHER ELEMENTS.
11. REMOVE AND REPLACE AS REQUIRED FOR CONSTRUCTION.

BOX GIRDER LENGTHENING
LOADING: HL-93

c:\users\mkol\documents\projectwise\workingdir\wsdot\dms22941\XL5467_01_DE_BG_BR17.7-Layout.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	10:22:12 AM	DESCRIPTION	DATE	NO					

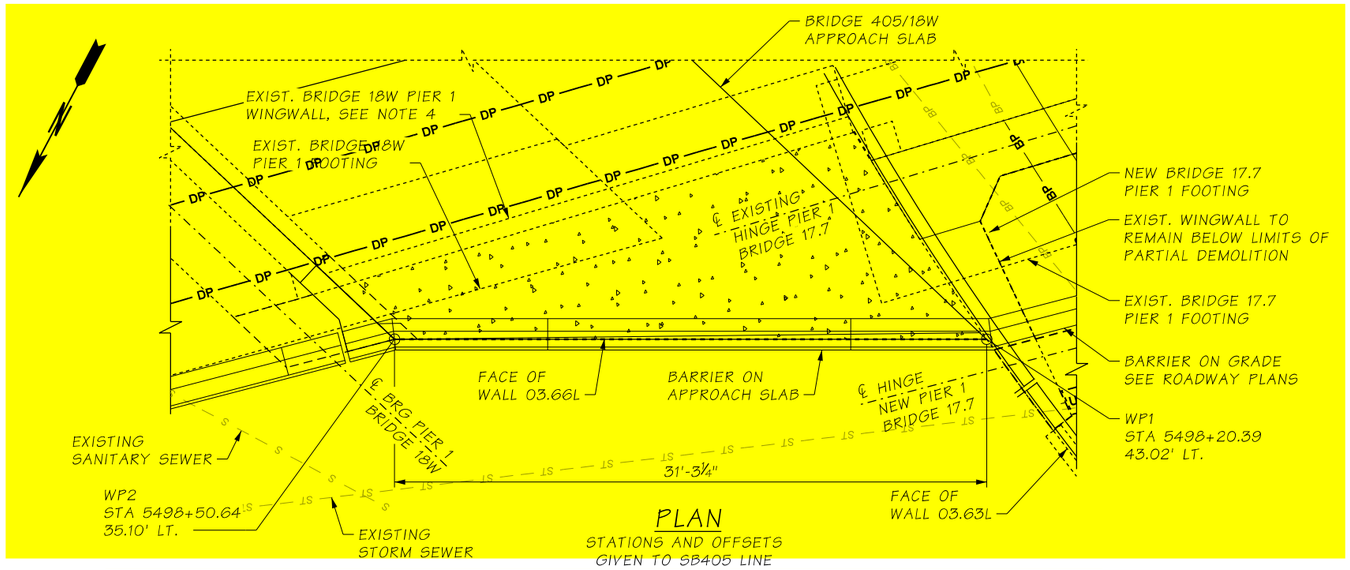
MATTHEW D. BAUGHMAN STATE OF WASHINGTON 49664 STRUCTURAL ENGINEER PROFESSIONAL ENGINEER
DATE
E.O.R. 1 STAMP BOX
DATE
E.O.R. 2 STAMP BOX

Washington State Department of Transportation
FLATIRON LANE
wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT
BRIDGE 405/17.7 - RENTON AVE OVER I-405
BRIDGE LAYOUT

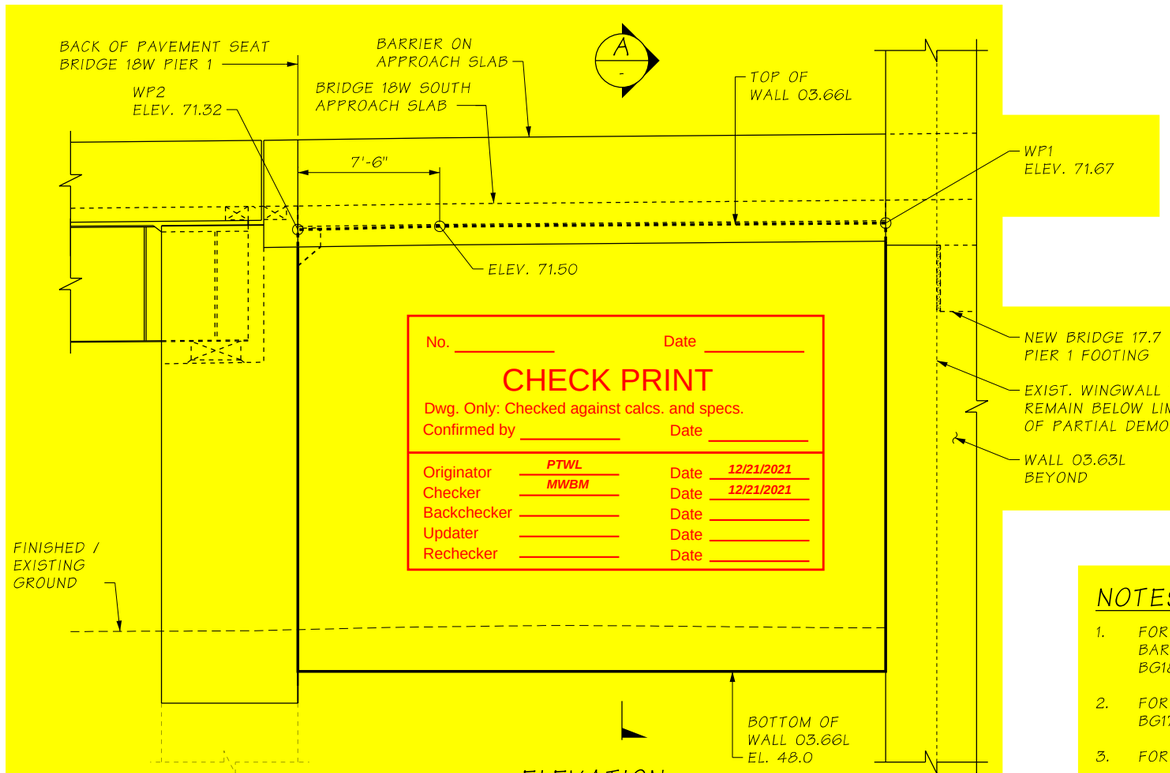
PLAN REF. NO. BG17.7-01
SHEET OF SHEETS

C.S. 1745 ~ PROJECT NUMBER 9242 ~ NORTHWEST REGION ~ I-405 ~ BRIDGE NO 405/17.7 (LENGTHENING)



PLAN

STATIONS AND OFFSETS GIVEN TO SB405 LINE



ELEVATION

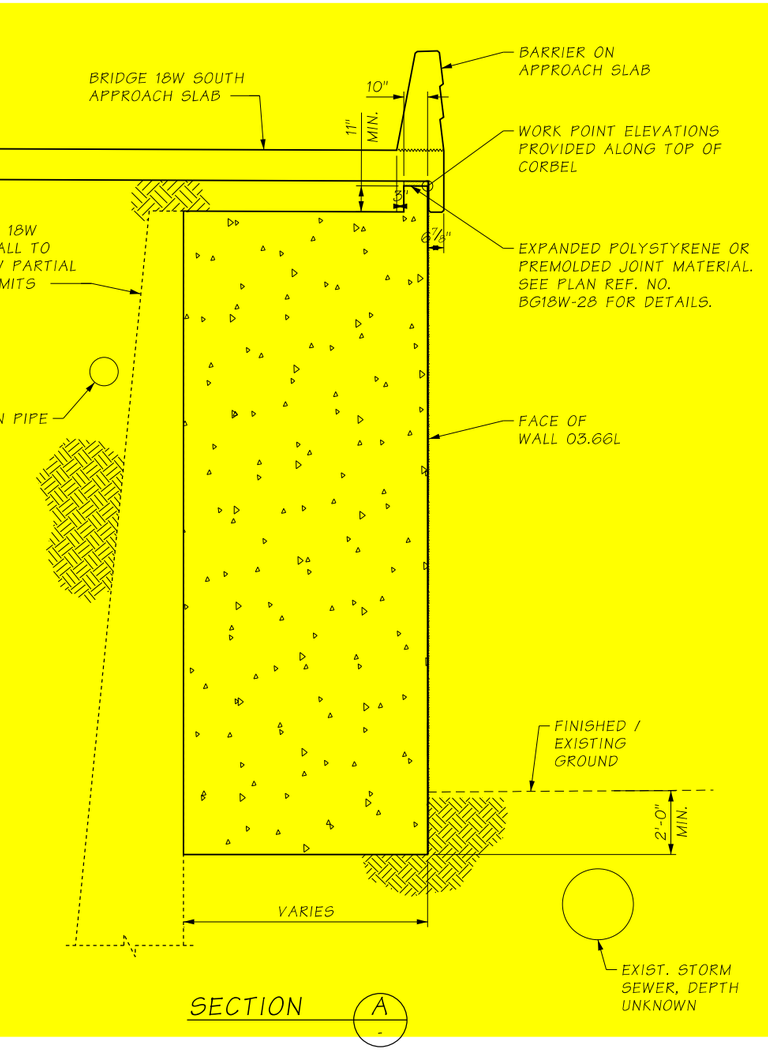
No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date



SECTION A

NOTES:

1. FOR BRIDGE 18W PIER 1, SOUTH APPROACH SLAB AND BARRIER DETAILS, SEE PLAN REF. NO. BG18W-05, BG18W-25 AND BG18W-27.
2. FOR BRIDGE 17.7 PIER 1 DETAILS, SEE PLAN REF. NO. BG17.7-06.
3. FOR WALL 03.63L DETAILS, SEE PLAN REF. NO. W86-1.
4. FOR PARTIAL DEMOLITION OF BRIDGE 18W EXISTING WINGWALL, SEE PLAN REF. NO. BG18W-04.
5. DIMENSIONS REFERENCING EXISTING ELEMENTS ARE BASED ON AS-BUILT DRAWINGS AND SHALL BE FIELD VERIFIED. CONTRACTOR SHALL NOTIFY ENGINEER IF SIGNIFICANT DIFFERENCES ARE OBSERVED.
6. THE FRONT FACE OF WALL 03.66L SHALL HAVE A FRACTURED FIN FINISH WITH PIGMENTED SEALER TO 1' BELOW FINISHED GROUND. PIGMENTED SEALER TO BE 'WASHINGTON GRAY' COLOR TO MATCH EXISTING. SEE PLAN REF. NO. BG18W-25 FOR DETAILS OF FRACTURED FIN FINISH.

FILE NO. 9242 SHEET _____ I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_01_DE_RW_W03.66L-RetWall1.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	C. KHUSHIRAM				10	WASH.			
Checked By:	M. DASTFAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/16/2021								
Time:	3:25:13 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BALGHMAN — STATE OF WASHINGTON — 49664 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

RENTON AVE OVER I-405

RETAINING WALL 03.66L

1 OF 2

PLAN REF. NO. W03.66L-1

SHEET OF SHEETS

INDEX OF SHEETS

LEGEND

IDENTIFIES SECTION, VIEW, OR DETAIL

TAKEN OR SHOWN ON PLAN REF. NO. BG17.7-05

TAKEN OR SHOWN ON CURRENT SHEET

▽ ← EPOXY COATED BAR

PJF = PREFORMED JOINT FILLER

SURVEY CONTROL POINTS				
POINT	STATION	OFFSET	NORTHING	EASTING
P.C.	13+66.10	0.00	178132.25	1302053.21
P.T.	15+65.38	0.00	178116.95	1302234.24
P.C.	17+01.50	0.00	178017.21	1302326.86

GENERAL NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATION FOR ROADS, BRIDGES, AND MUNICIPAL CONSTRUCTION", ENGLISH UNITS, DATED 2018 AND AMENDED JANUARY 7, 2019.

2. NEW CONSTRUCTION HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS", EIGHTH EDITION 2017. DEAD LOAD INCLUDES AN ALLOWANCE OF 65 POUNDS PER LINEAR FOOT FOR THE ELECTRICAL CONDUITS AND ATTACHMENTS. THE BRIDGE TRAFFIC BARRIERS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS FOR TEST LEVEL 4 (TL-4) RAILINGS.

3. THE SEISMIC DESIGN OF THIS STRUCTURE HAS BEEN COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF THE "AASHTO GUIDE SPECIFICATIONS FOR LRFD SEISMIC BRIDGE DESIGN" SECOND EDITION 2011, WITH INTERIMS THROUGH 2015, USING SEISMIC DESIGN CATEGORY C, SITE CLASS C, AND THE FOLLOWING ACCELERATION PARAMETERS:

PERIOD (sec)	SAFETY EVALUATION EARTHQUAKE (g)
0.0 (PGA)	0.51
0.1	1.07
0.2	1.26
0.3	1.09
0.4	0.90
0.5	0.75
0.6	0.64
0.7	0.55
0.8	0.49
0.9	0.43
1.0	0.38
1.5	0.24
2.0	0.17
3.0	0.10
4.0	0.071
5.0	0.056

PGA = PEAK GROUND ACCELERATION
THE SITE-SPECIFIC SEE RESPONSE SPECTRUM IS IN ACCORDANCE WITH GEOTECH REPORT "I-405 R2B SEGMENT 1A SITE SPECIFIC HAZARD ANALYSIS RFU" DATED MARCH 25, 2021, USING THE BR-18W SITE DATA.

4. THE CONCRETE FOR THE SUPERSTRUCTURE SHALL BE CLASS 5000. THE CONCRETE IN APPROACH SLABS SHALL BE CLASS 4000A. ALL OTHER CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000. THE CONCRETE FOR THE TOP SLAB OF THE SUPERSTRUCTURE SHALL ALSO MEET THE REQUIREMENTS FOR CLASS 4000D CONCRETE IN SECTIONS 6-02.3(2)A1 AND 6-02.3(4)D OF THE WSDOT STANDARD SPECIFICATIONS.

5. REINFORCING BARS SHALL CONFORM TO ASTM A706 GRADE 60 UNLESS OTHERWISE NOTED. UNLESS OTHERWISE NOTED, THE MINIMUM LAP SPLICE FOR BLACK REINFORCING BARS SHALL BE:

BAR SIZES:	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH (TOP BARS):	2'-0"	2'-7"	3'-1"	3'-7"	4'-1"	4'-7"	5'-2"	5'-9"
SPLICE LENGTH (OTHERS):	2'-0"	2'-0"	2'-5"	2'-9"	3'-2"	3'-7"	4'-0"	4'-5"

THE ABOVE SPLICE LENGTHS ARE FOR CLASS B SPLICES WHERE λ_{rc} =0.4.
TOP BARS ARE HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF CONCRETE IS CAST BELOW REINFORCEMENT.
LAP SPLICES OF ADJACENT BARS SHALL BE STAGGERED UNLESS NOTED OTHERWISE.

6. THE LOCATIONS OF ALL EXISTING UTILITIES WITHIN THE VICINITY OF THE STRUCTURE SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO EXCAVATION.

7. UNLESS OTHERWISE SHOWN ON THE PLANS, THE CONCRETE COVER MEASURED FROM THE FACE OF THE CONCRETE TO THE FACE OF ANY REINFORCEMENT BAR SHALL BE AS FOLLOWS:
   - 2½" TOP OF TOP SLAB
   - 1" TOP AND BOTTOM OF BOTTOM SLAB AND BOTTOM OF TOP SLAB
   - 1½" BOTH FACES OF WEBS
   - 3" CAST AGAINST EARTH
   - 2" ALL OTHER LOCATIONS.

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	

8. FALSEWORK SHALL BE CAREFULLY RELEASED TO PREVENT IMPACT OR UNDUE STRESS IN STRUCTURE.

9. THE BACKFILL BEHIND THE ABUTMENTS SHALL NOT BE PLACED UNTIL THE BRIDGE SUPERSTRUCTURE IS COMPLETED, AS NOTED IN THE CONSTRUCTION SEQUENCE, SEE PLAN REF. NO. BG17.7-03. BACKFILL AT THE PIER ABUTMENTS SHALL BE PLACED IN ACCORDANCE WITH STANDARD SPECIFICATION 2-03.3(14)I.

10. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED ¾", UNLESS NOTED OTHERWISE.

11. CONTRACTOR SHALL AVOID DAMAGE TO EXISTING REINFORCING STEEL DURING DRILLING OPERATIONS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF ANY EXISTING REBAR OR ANCHOR BOLTS ARE DAMAGED.

12. HOLES DRILLED IN EXISTING CONCRETE SHALL BE DRILLED WITH A ROTARY HAMMER. CORE DRILLING IS NOT ALLOWED, UNLESS NOTED OTHERWISE.

13. EQUIPMENT FOR REMOVING PORTIONS OF EXISTING CONCRETE WHERE EXISTING STEEL REINFORCEMENT IS SPECIFIED TO BE SAVED SHALL BE SELECTED ACCORDINGLY. THE FOLLOWING LIMITS APPLY TO POWER DRIVEN TOOLS:
   - JACK HAMMERS NO MORE FORCEFUL THAN THE NOMINAL 30 POUND CLASS.
   - CHIPPING HAMMERS NO MORE FORCEFUL THAN THE NOMINAL 15 POUND CLASS.

   POWER DRIVEN TOOLS SHALL BE OPERATED AT ANGLES LESS THAN 45 DEGREES AS MEASURED FROM THE SURFACE OF THE CONCRETE.

14. DIMENSIONS SHOWN IN THESE PLANS ARE BASED ON ORIGINAL CONSTRUCTION RECORDS AND SITE SURVEYS. DIMENSIONS SHALL BE MEASURED IN THE FIELD AND VERIFIED BY THE CONTRACTOR. CONTRACTOR SHALL NOTIFY ENGINEER IF SIGNIFICANT DIFFERENCES ARE OBSERVED.

15. AS-BUILT PLANS FOR THE EXISTING BRIDGE AND RETAINING WALLS ARE PROVIDED IN APPENDICES N1 AND N2 OF THE CONFORMED RFP.

16. SPREAD FOOTING DESIGN IS BASED ON THE FOLLOWING FACTORED BEARING RESISTANCES:

LOCATION	FACTORED BEARING RESISTANCES (KSF)		
	SERVICE LIMIT STATE (1" SETTLEMENT)	STRENGTH LIMIT STATE	EXTREME LIMIT STATE
PIER 1	5.4	7	12

THE FACTORED BEARING RESISTANCES ARE IN ACCORDANCE WITH "GEOTECHNICAL REPORT: BRIDGE 405/17.7 (SB I-405 over Renton Avenue) and Walls 03.63L, 03.65L, 03.66L".

17. ASSUMED CONSTRUCTION LIVE LOAD = 10PSF. CONTRACTOR SHALL INCLUDE LOADING CONFIGURATION IN THE DEMOLITION PLAN SUBMITTAL IN ACCORDANCE WITH STANDARD SPECIFICATION 2-02.3(2)A1.

18. ALL EXISTING AND NEW FORMWORK SHALL BE REMOVED FROM THE OUTER CELLS OF THE BOX.

19. WHERE THESE PLANS REFER TO CARDINAL DIRECTIONS TO DESCRIBE LOCATIONS, THESE SHALL GENERALLY BE INTERPRETED AS FOLLOWS:
   - NORTH = LOOKING AHEAD ON STATIONING OF NB405 LINE
   - SOUTH = LOOKING BACK ON STATIONING OF SB405 LINE
   - EAST = LOOKING AHEAD ON STATIONING OF R-LINE
   - WEST = LOOKING BACK ON STATIONING OF R-LINE

HOLD POINTS:

CONTRACTOR SHALL FOLLOW THE HOLD POINT PROCESS AS ESTABLISHED IN SECTION 2.28.5.4 OF THE CONFORMED RFP DOCUMENTS. MINIMUM HOLD POINTS FOR THIS BRIDGE ARE AS FOLLOWS:
- AFTER INSTALLATION OF TEMPORARY DEADMAN BEHIND PIER 3 AND BEFORE THE START OF EXCAVATION BEHIND PIER 1
- AFTER COMPLETION OF BRIDGE EXCAVATION AND BEFORE THE START OF STRUCTURE FOUNDATION
- BEFORE CONCRETE PLACEMENT OF FOOTINGS, PIER WALL, SUPERSTRUCTURE, TRAFFIC BARRIERS, WING WALLS AND CURTAIN WALLS (WITH FORMWORK, INSERTS, AND REINFORCEMENT IN PLACE)
- PRIOR TO INSTALLATION OF POST-TENSIONING STRANDS
- PRIOR TO JACKING OPERATIONS FOR POST-TENSIONING WITH A HYDRAULIC JACK
- PRIOR TO DEMOLITION OF EXISTING ABUTMENT

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_02_DE_BG_BR17.7-Notes.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/16/2021								
Time:	2:31:09 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 21604 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

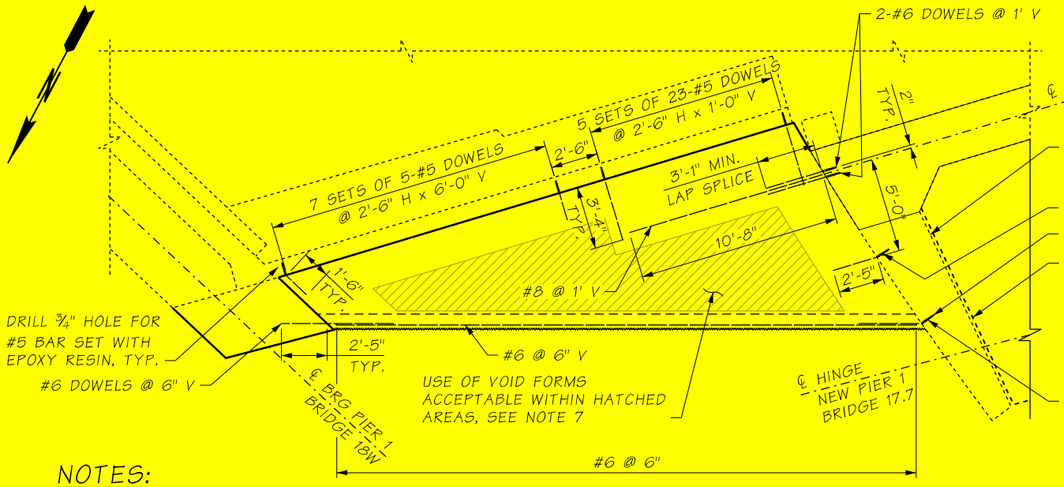
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

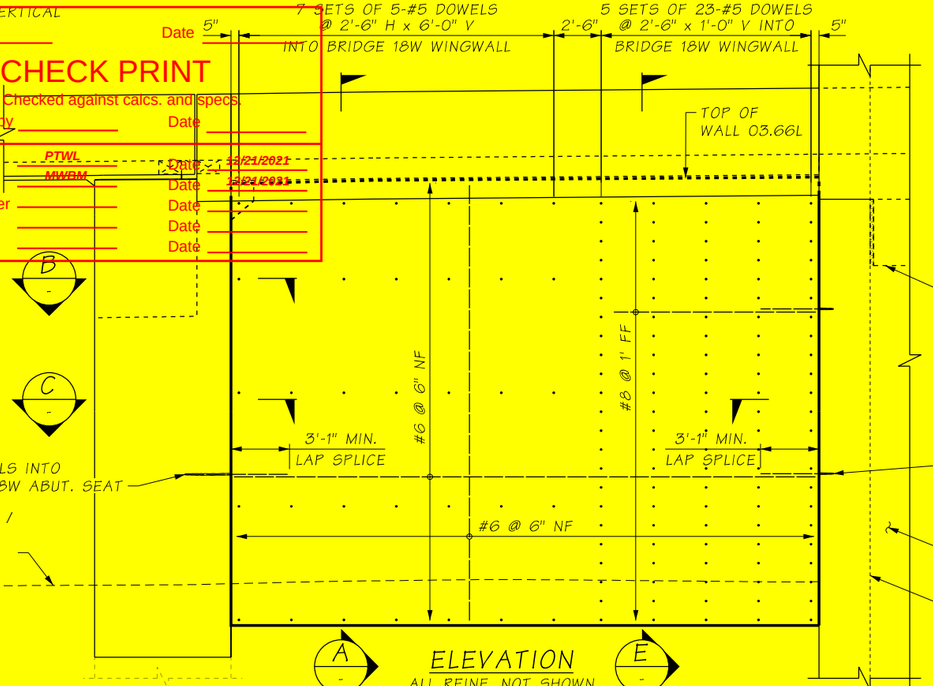
BRIDGE GENERAL NOTES

PLAN REF. NO. BG17.7-02

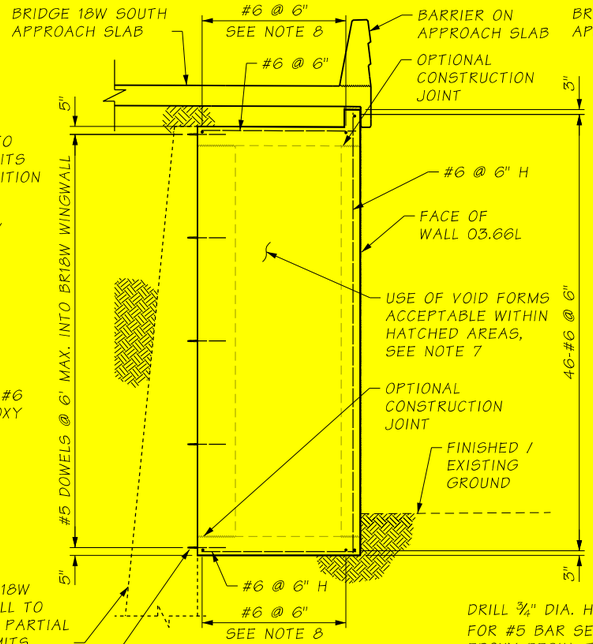
SHEET OF SHEETS



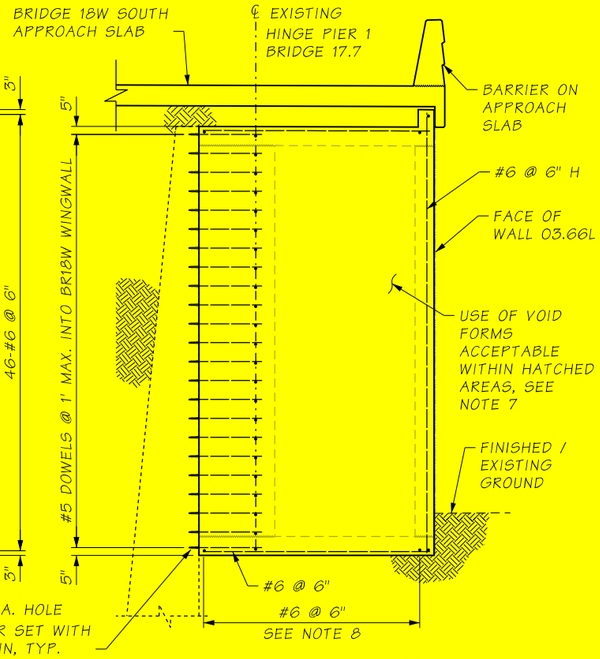
PLAN



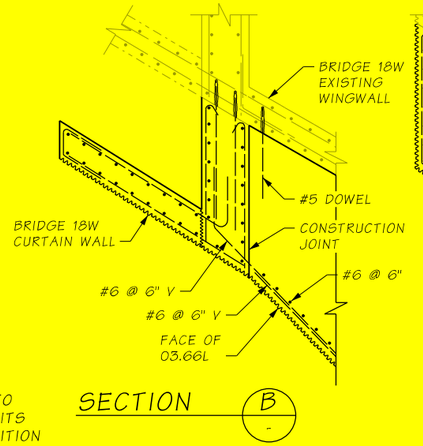
ELEVATION
ALL REINF. NOT SHOWN FOR CLARITY



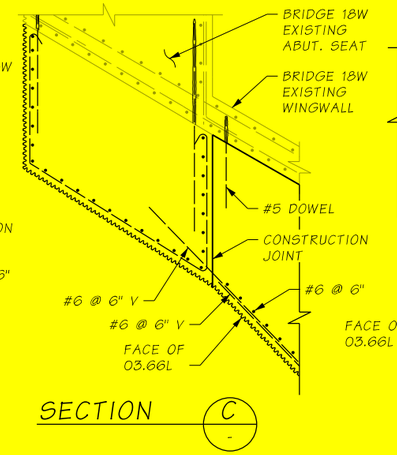
SECTION A
ALL REINF. NOT SHOWN FOR CLARITY



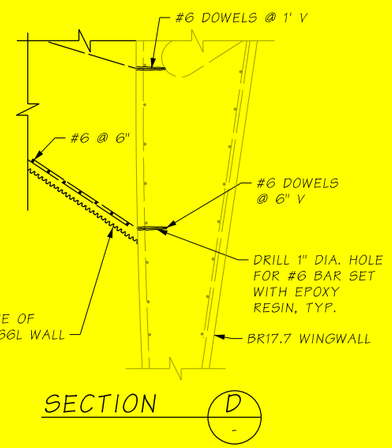
SECTION E
ALL REINF. NOT SHOWN FOR CLARITY



SECTION B



SECTION C



SECTION D

NOTES:

H = HORIZONTAL

V = VERTICAL

1. CONTRACTOR SHALL AVOID DAMAGE TO EXISTING STEEL REINFORCEMENT DURING DRILLING OPERATIONS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF ANY EXISTING REBAR ARE DAMAGED.
2. ROUGHEN, CLEAN AND SATURATE THE EXISTING CONCRETE SURFACES BONDING TO FRESH CONCRETE IN ACCORDANCE WITH SECTION 6.02.3(12) OF THE STANDARD SPECIFICATIONS.
3. DRILLED HOLES SHALL HAVE A MINIMUM DISTANCE TO EDGE OF CONCRETE OF 4 INCHES.
4. #5 DOWELS SHALL HAVE A MINIMUM EMBEDMENT DEPTH OF 8 INCHES AND #6 DOWELS SHALL HAVE A MINIMUM EMBEDMENT DEPTH OF 9 INCHES.
5. EXISTING REINFORCING IS SHOWN BASED ON THE RECORD DRAWINGS IN APPENDIX N2 OF THE CONFORMED RFP.
6. UNLESS VOID FORMS ARE USED TO LIMIT THE LEAST DIMENSION TO LESS THAN 6', WALL 03.66L CONCRETE SHALL BE CONSIDERED MASS CONCRETE. THE FOLLOWING CONDITIONS SHALL APPLY TO THE PLACEMENT OF MASS CONCRETE:
   - THE TEMPERATURE OF MASS CONCRETE SHALL NOT EXCEED 160° F.
   - THE TEMPERATURE DIFFERENCE BETWEEN THE GEOMETRIC CENTER OF THE CONCRETE AND THE CENTER OF NEARBY EXTERIOR SURFACES SHALL NOT EXCEED 35° F.
   - THE CONTRACTOR SHALL SUBMIT A THERMAL CONTROL PLAN FOR ENGINEER APPROVAL PRIOR TO PLACING CONCRETE. THE PLAN SHALL SPECIFY MEASURES TO ACHIEVE THE ABOVE REQUIREMENTS.
7. THE USE OF VOID FORMS IS ACCEPTABLE WITHIN THE HATCHED AREAS SHOWN. VOID FORMS SHALL BE LOCATED NO CLOSER THAN 4" TO ANY REINFORCING BAR, PROVIDING MINIMUM CONCRETE THICKNESSES OF:
   - 1' ALONG FRONT FACE AND AT TOP AND BOTTOM
   - 2' ALONG 18W WINGWALL
   - 3' ALONG 17.7 WINGWALL AND 18W ABUTMENT WALL
   - 4' ALONG 18W WINGWALL NEAR ABUTMENT WALL

   IF VOID FORMS ARE USED, CONTRACTOR SHALL SUBMIT MATERIAL SPECIFICATIONS AND INSTALLATION PLAN TO ENGINEER FOR APPROVAL.
8. FAN AND TRIM BARS TO FIT, MAINTAINING MAX 6" SPACING.

CHECK PRINT
No. _____ Date _____
Dwg. Only: Checked against calcs. and specs.
Confirmed by _____ Date _____
Originator PTWL Date 12/21/2021
Checker MWBM Date 12/21/2021
Backchecker _____ Date _____
Updater _____ Date _____
Rechecker _____ Date _____

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_02_DE_RW_W03.66L-RetWall2.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	C. KHUSHIRAM				10	WASH.			
Checked By:	M. DASTFAN				JOB NUMBER XL5467				
Detailed By:	M. AASAL								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	11:42:41 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BALGHMAN STATE OF WASHINGTON 49664 PROFESSIONAL ENGINEER STRUCTURAL ENGINEER
DATE
E.O.R. 1 STAMP BOX

DATE
E.O.R. 2 STAMP BOX

Washington State Department of Transportation
FLATIRON LANE
wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT
RENTON AVE OVER I-405
RETAINING WALL 03.66L
2 OF 2

PLAN REF. NO. W03.66L-2
SHEET OF SHEETS

I-405 FILE NO. 9242 SHEET

CONSTRUCTION SEQUENCE:

1. SEE OTHER PACKAGES FOR UTILITY RELOCATIONS, MAINTENANCE OF TRAFFIC, AND SITE PREPARATION.

2. PERFORM PRE-CONDITION SURVEYS OF EXISTING BRIDGE AND SURROUNDING STRUCTURES TO VERIFY THE AS-BUILT CONDITION. PERFORM PRE-CONDITION SURVEYS OF SENSITIVE UTILITIES AS REQUIRED. INITIATE STRUCTURE MONITORING, AS REQUIRED.

3. INSTALL TEMPORARY CIVIL WORKS AND TEMPORARY TRAFFIC CONTROL, AS REQUIRED.

4. CLOSE RENTON AVENUE BRIDGE TO ALL TRAFFIC (START OF 300 CALENDAR DAY ALLOWABLE FULL LOCAL ROAD CLOSURE PER RFP 2.22.4.3.4.3.).

5. BRIDGE CONSTRUCTION:

   A. DESIGN AND INSTALL A TEMPORARY DEADMAN BEHIND PIER 3, OR A TEMPORARY STRUT IN FRONT OF PIER 3, TO PROVIDE APPROXIMATELY 850 kips (UNFACTORED) OF LATERAL RESTRAINT TO THE PIER 3 CAP IN ORDER TO:
      1) LIMIT MAXIMUM MOMENTS IN PIER 3 PILES TO LESS THAN 1400 kip-ft PER PILE DURING CONSTRUCTION, AND
      2) LIMIT THE MAXIMUM TOP OF PIER 3 DEFLECTION TO LESS THAN 1" DURING CONSTRUCTION.

      LATERAL RESTRAINT IS ASSUMED TO BE APPLIED TO THE EXISTING PIER CAP APPROXIMATELY 2 FEET BELOW THE HINGE LINE. THE CONSTRUCTION INDUCED MOMENT AND DEFLECTION IS DUE TO UNBALANCED SOIL PRESSURE BEHIND PIER 3 WITH EXCAVATION BEHIND EXISTING PIER 1. TYPE 2E WORKING DRAWINGS SHALL DEMONSTRATE THAT MAXIMUM DEFLECTION AND MOMENTS IN PIER 3 PILES IS LIMITED AS REQUIRED DURING CONSTRUCTION.

   B. DESIGN AND INSTALL A TEMPORARY VERTICAL SUPPORT IN FRONT OF EXISTING PIER 1. THE CENTERLINE OF TEMPORARY SUPPORT SHALL BE NO MORE THAN 2'-0" FROM FACE OF PIER 1 CAP. THE TEMPORARY SUPPORT SHALL BE PRE-LOADED TO RELEASE VERTICAL LOAD IN THE EXISTING PIER 1 HINGE CONNECTION. TEMPORARY VERTICAL SUPPORT SHALL SUPPORT THE BOX GIRDER SUPERSTRUCTURE UNDER THE EXISTING WEB LINES AND BE CAPABLE OF ACCOMMODATING ANTICIPATED MOVEMENTS DURING CONSTRUCTION. THE ESTIMATED (UNFACTORED DEAD LOAD) FORCES IN THE EXISTING PIER 1 HINGE CONNECTION ARE:
      - 335 kips VERTICAL FORCE
      - 440 kip-ft TRANSVERSE MOMENT (SOUTH SIDE OF PIER WALL IN COMPRESSION)

   C. NEW PIER 1 AND BOX EXTENSION:
      I. PARTIALLY DEMOLISH EXISTING RETAINING WALL 03.63L AND EXCAVATE TO BOTTOM OF NEW PIER 1 FOOTING. SURVEY BRIDGE AND PIER 3 TO VERIFY PERFORMANCE OF TEMPORARY DEADMAN (SEE STEP 5A).

      II. CONSTRUCT NEW PIER 1 FOOTING, ABUTMENT WALL AND WINGWALL. RETAINING WALL 03.66L CONSTRUCTION MAY BEGIN.

      III. PARTIALLY DEMOLISH THE EXTERIOR FACE OF THE EXISTING PIER 1 DIAPHRAGM, INCLUDING ACCESS OPENINGS, INSTALL MECHANICAL COUPLERS AND DOWELS, AND CORE HOLES FOR NEW POST-TENSIONING TENDONS.

      IV. INSTALL TEMPORARY FALSEWORK FOR NEW BOX GIRDER SUPERSTRUCTURE EXTENSION.

      V. CONSTRUCT NEW BOX GIRDER SUPERSTRUCTURE EXTENSION (BOTTOM SLAB, WEBS + DIAPHRAGMS, TOP SLAB), INCLUDING EXTENDING POWER CONDUITS.

   D. EXISTING STRUCTURE MODIFICATIONS: (THIS STEP MAY BE PERFORMED CONCURRENT WITH, OR PRIOR TO, STEPS 5A AND 5B).
      I. CUT ACCESS HOLES INTO EXISTING BOX GIRDER TOP SLAB FOR TEMPORARY ACCESS, AND INTO EXISTING BOX GIRDER BOTTOM SLAB FOR PERMANENT ACCESS HATCHES. CONTRACTOR SHALL INCLUDE TEMPORARY ACCESS PLAN IN DEMOLITION PLAN SUBMITTAL.

      II. CORE HOLES THROUGH SPAN 1 INTERMEDIATE DIAPHRAGM AND EXIST PIER 1 DIAPHRAGM FOR NEW PT.

      III. PARTIALLY DEMOLISH EXISTING DECK AND DIAPHRAGM AT PIER 2 AND RECONSTRUCT WITH NEW PT DEVIATOR.

      IV. PARTIALLY DEMOLISH EXISTING DIAPHRAGM AT PIER 3 AND RECONSTRUCT WITH NEW PT ANCHORAGE.

      V. FORM AND CAST CONCRETE DEVIATOR DIAPHRAGMS INSIDE EXISTING BOX IN SPANS 1 AND 2 WITH PT DEVIATORS.

      VI. INSTALL PT DUCTS.

      VII. FORM AND POUR THE TEMPORARY ACCESS OPENING CLOSURES IN TOP SLAB AND PERMANENT ACCESS HATCHES IN BOTTOM SLAB.

   STEPS II THROUGH V MAY BE PERFORMED CONCURRENTLY

   E. POST-TENSION THE TENDONS (STRESS STRANDS AND GROUT DUCTS), WITH DEAD END AT PIER 3 AND LIVE END AT PIER 1. RETAINING WALL 03.66L SHALL BE CONSTRUCTED PRIOR TO POST-TENSIONING THE SUPERSTRUCTURE. REMOVE NEW BOX GIRDER EXTENSION FALSEWORK.

   F. COMPLETE BACKFILL AND RECONSTRUCTION OF WALL 03.63L AND CONSTRUCTION OF WALL 03.65L. TEMPORARY DEADMAN BEHIND PIER 3 (OR ALTERNATIVE MEASURES NOTED IN STEP 5A) MAY BE REMOVED AFTER BACKFILL BEHIND PIER 1 HAS BEEN PLACED UP TO THE HINGE LINE.

   G. DISENGAGE EXISTING PIER 1 FROM THE BOX GIRDER SUPERSTRUCTURE. CONTRACTOR SHALL INCLUDE METHOD AND PROCEDURES FOR TRANSFERRING LOAD FROM EXISTING PIER 1 TO NEW PIER 1 IN DEMOLITION PLAN SUBMITTAL.

   H. RELEASE LOAD FROM THE TEMPORARY VERTICAL SUPPORT IN FRONT OF PIER 1. THE ESTIMATED (UNFACTORED DEAD LOAD) FORCES REMAINING IN THE TEMPORARY SUPPORT JUST PRIOR TO RELEASING THE BOX GIRDER SUPERSTRUCTURE ARE:
      - 565 kips VERTICAL FORCE
      - 300 kip-ft TRANSVERSE MOMENT (SOUTH SIDE OF SUPPORT IN COMPRESSION)

      THE ESTIMATED DISPLACEMENT OF THE BOX GIRDER SUPERSTRUCTURE AFTER REMOVAL OF THE TEMPORARY SUPPORT IS ⅜" VERTICALLY, MEASURED AT THE TEMPORARY SUPPORT, WITH NEGLIGIBLE LATERAL MOVEMENT.

   I. FIELD SURVEY GEOMETRY FOR AS-BUILT DOCUMENTATION.

   J. DEMOLISH EXISTING PIER 1 TO 2-FT MIN BELOW FINAL PAVEMENT ELEVATION.

   K. CONSTRUCT NEW PIER 1 FOOTING CLOSURE POUR CONNECTION TO EXISTING PIER 1 WALL.

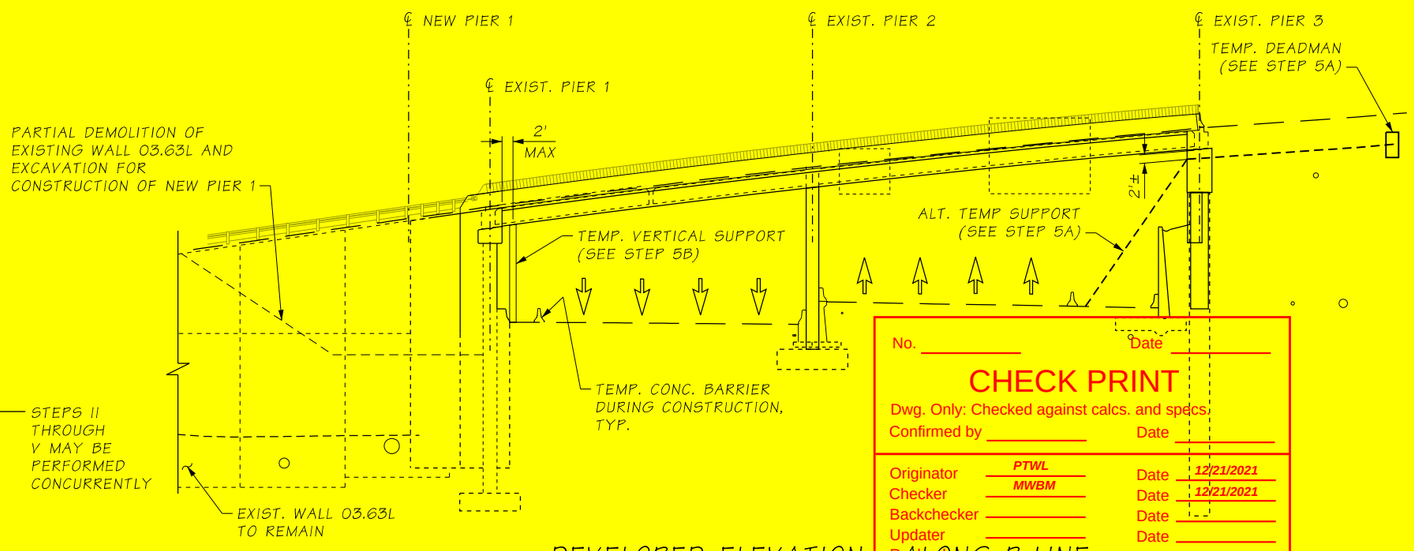
   L. CONSTRUCT NEW EAST AND WEST APPROACH SLABS.

   M. FORM AND POUR NEW BRIDGE BARRIER, SIDEWALK, AND RAILING EXTENSION, INCLUDING EXTENDING LIGHTING CONDUIT.

   N. APPLY PIGMENTED SEALER AND INSTALL EXPANSION JOINTS.

6. COMPLETE SB405 WIDENING UNDER NEW BRIDGE.

7. FINISHING WORKS ADJACENT TO BRIDGE (PAVING, GUARDRAIL, SIGNING, LIGHTING, STRIPING, SITE RESTORATION, UTILITY RELOCATIONS, ETC.)



DEVELOPED ELEVATION - ALONG R-LINE
(SHOWN AFTER STEP 5.C.i)

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Reviewer		Date	

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_03_DE_BG_BR17.7-ConstSeq.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/21/2021								
Time:	8:07:21 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 39064 — PROFESSIONAL ENGINEER — STRUCTURAL ENGINEER

E.O.R. 1 STAMP BOX DATE

E.O.R. 2 STAMP BOX DATE

Washington State Department of Transportation

FLATIRON LANE wood. COWI

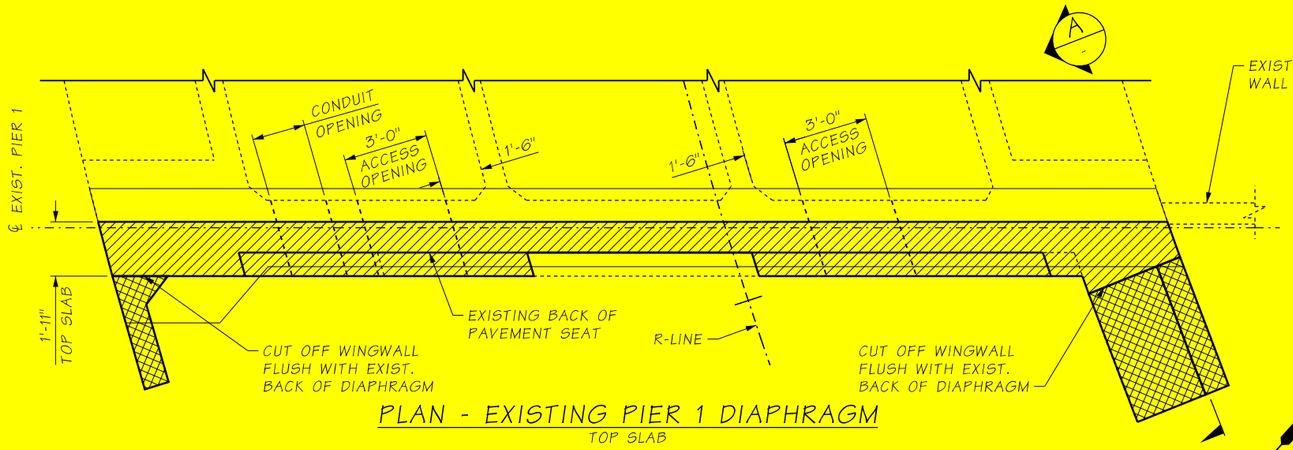
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

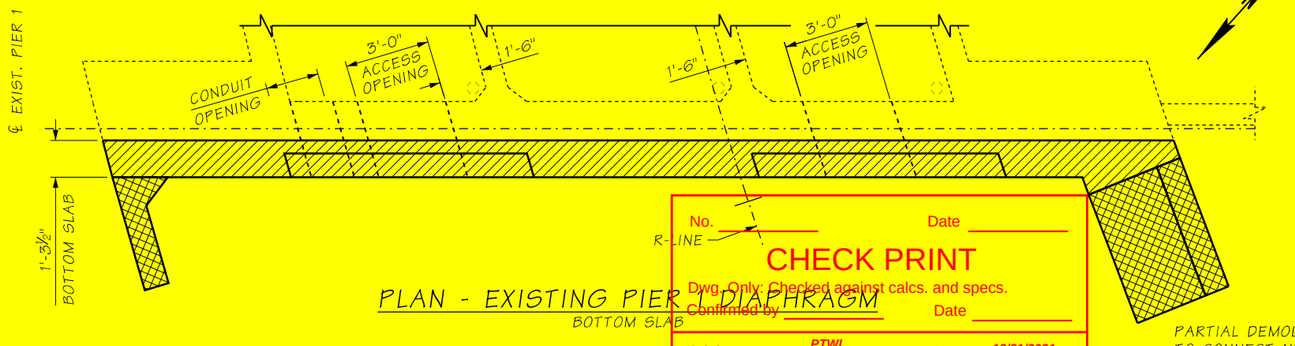
CONSTRUCTION SEQUENCE

PLAN REF. NO. BG17.7-03

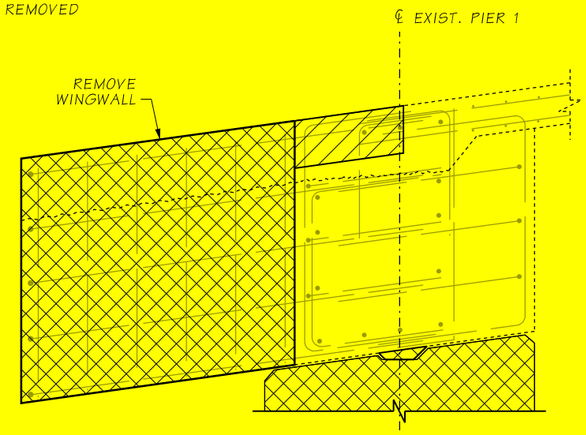
SHEET OF SHEETS



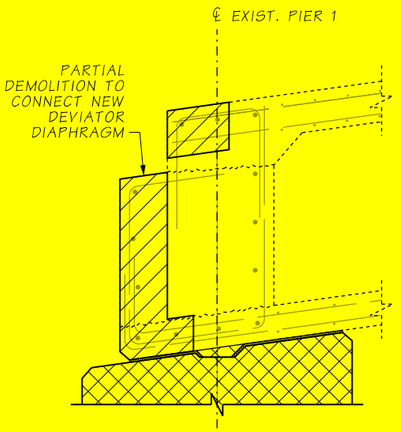
PLAN - EXISTING PIER 1 DIAPHRAGM
TOP SLAB



PLAN - EXISTING PIER 1 DIAPHRAGM
BOTTOM SLAB



SECTION A

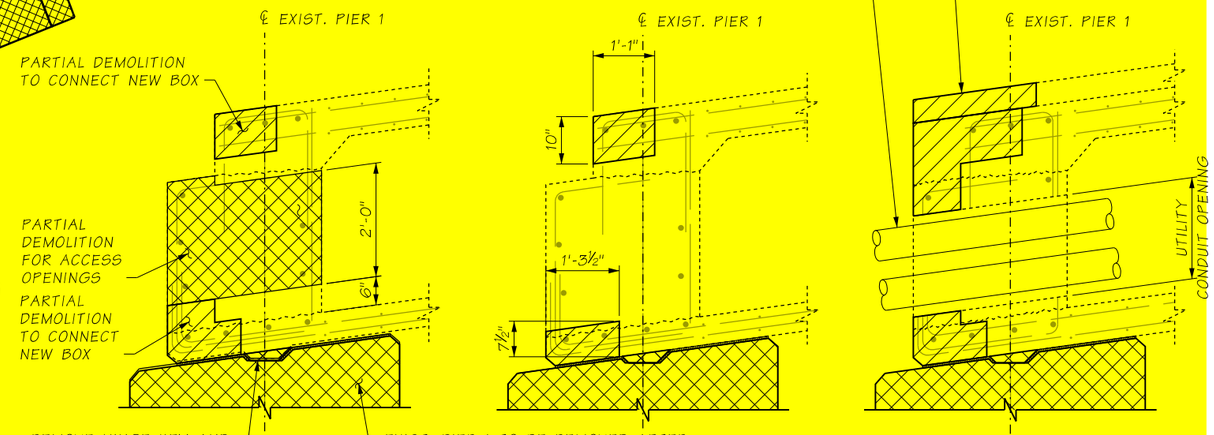


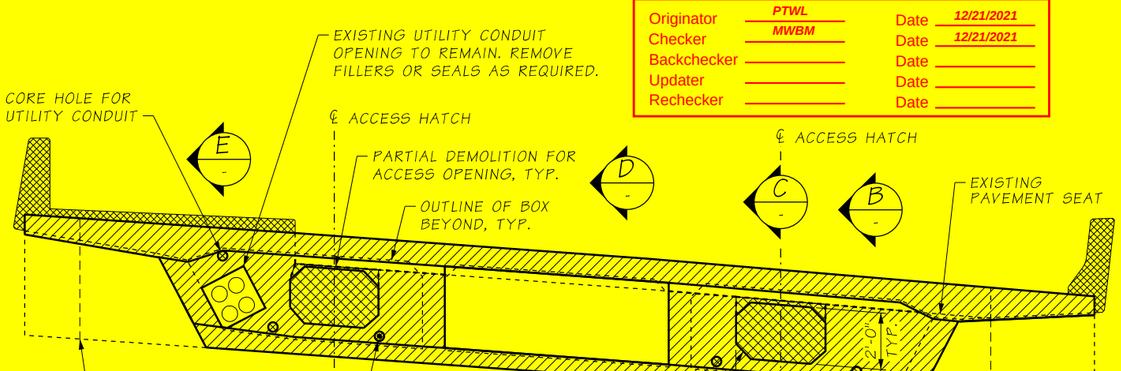
SECTION B
OUTER BOX CELLS

LEGEND:

PARTIAL DEMOLITION, WITH REINFORCEMENT TO REMAIN

PARTIAL DEMOLITION, WITH REINFORCEMENT REMOVED





ELEVATION - EXISTING PIER 1 DIAPHRAGM
LOOKING AHEAD ON STATIONING
DIMENSIONS AND ELEVATIONS ARE ALONG CL HINGE

SECTION C
AT ACCESS OPENINGS

SECTION D
CENTER BOX CELL

SECTION E
CONDUIT OPENING

NOTE:
CALLOUTS IN SECTION C APPLICABLE TO ALL SECTIONS, UNLESS NOTED OTHERWISE.

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

FILE NO. 9242 SHEET
I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_04_DE_BG_BR17.7-DemoDet.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	K. BUNGER								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	10:29:46 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN STATE OF WASHINGTON 49664 STRUCTURAL ENGINEER PROFESSIONAL ENGINEER
DATE
E.O.R. 1 STAMP BOX

DATE
E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE wood. COWI

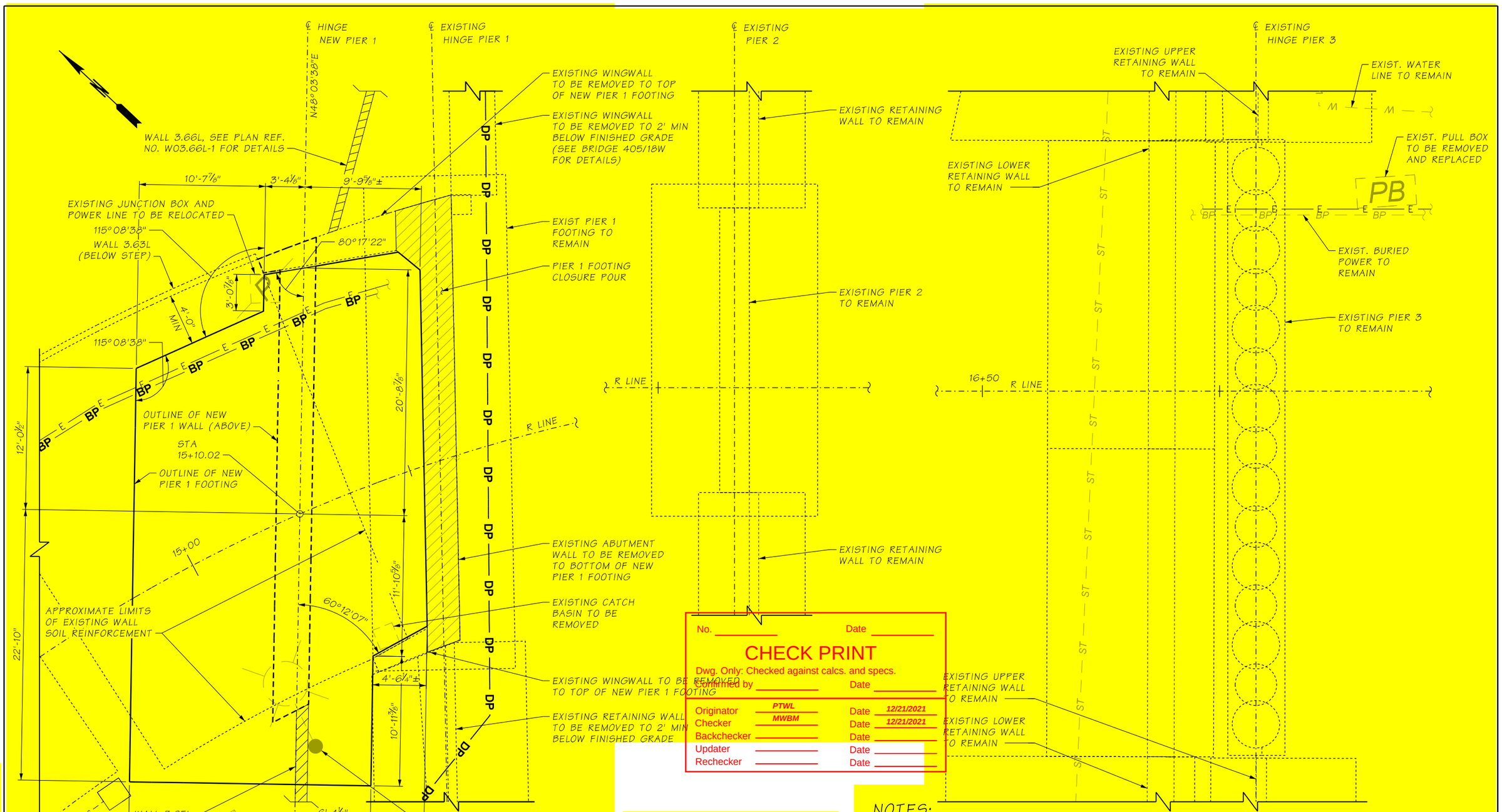
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

DEMOLITION DETAILS

PLAN REF. NO. BG17.7-04

SHEET OF SHEETS



No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	

FOUNDATION LAYOUT

NOTES:

1. FOR DRAINAGE, SEE PLAN REF. NO. DR-14.
2. FOR RETAINING WALLS 03.63L AND 03.65L, SEE PLAN REF. NO. W86-1 AND W83-1, RESPECTIVELY.
3. FOR UTILITIES, SEE PLAN REF. NO. UT-14.

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_05_DE_BG_BR17.7-FoundLayout.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	R. GARG				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	10:34:06 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN STATE OF WASHINGTON 39064 PROFESSIONAL ENGINEER

E.O.R. 1 STAMP BOX DATE

E.O.R. 2 STAMP BOX DATE

Washington State Department of Transportation

FLATIRON LANE wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

FOUNDATION LAYOUT

PLAN REF. NO. BG17.7-05

SHEET OF SHEETS

I-405 FILE NO. 9242 SHEET

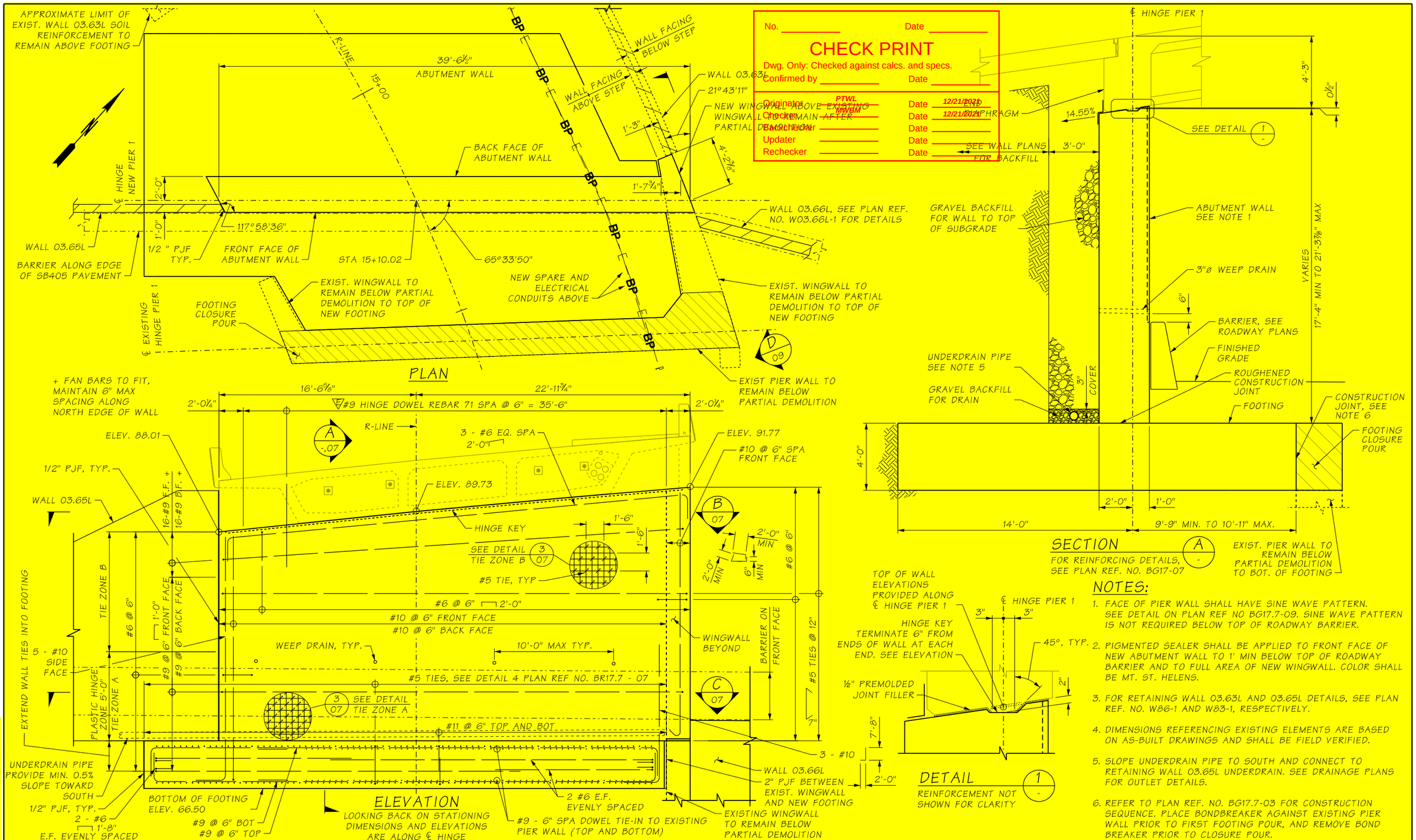
No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date



NOTES:

1. FACE OF PIER WALL SHALL HAVE SINE WAVE PATTERN. SEE DETAIL ON PLAN REF NO BG17.7-09. SINE WAVE PATTERN IS NOT REQUIRED BELOW TOP OF ROADWAY BARRIER.
2. PIGMENTED SEALER SHALL BE APPLIED TO FRONT FACE OF NEW ABUTMENT WALL TO 1' MIN BELOW TOP OF ROADWAY BARRIER AND TO FULL AREA OF NEW WINGWALL. COLOR SHALL BE MT. ST. HELENS.
3. FOR RETAINING WALL 03.63L AND 03.65L DETAILS, SEE PLAN REF. NO. W86-1 AND W83-1, RESPECTIVELY.
4. DIMENSIONS REFERENCING EXISTING ELEMENTS ARE BASED ON AS-BUILT DRAWINGS AND SHALL BE FIELD VERIFIED.
5. SLOPE UNDERDRAIN PIPE TO SOUTH AND CONNECT TO RETAINING WALL 03.65L UNDERDRAIN. SEE DRAINAGE PLANS FOR OUTLET DETAILS.
6. REFER TO PLAN REF. NO. BG17.7-03 FOR CONSTRUCTION SEQUENCE. PLACE BONDBREAKER AGAINST EXISTING PIER WALL PRIOR TO FIRST FOOTING POUR, AND REMOVE BOND BREAKER PRIOR TO CLOSURE POUR.

c:\users\mkol\documents\projectwise\workingdir\wsdot\dms22941\XL5467_06_DE_BG_BR17.7-Pier1Layout.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	R. GARG				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	10:41:07 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49664 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

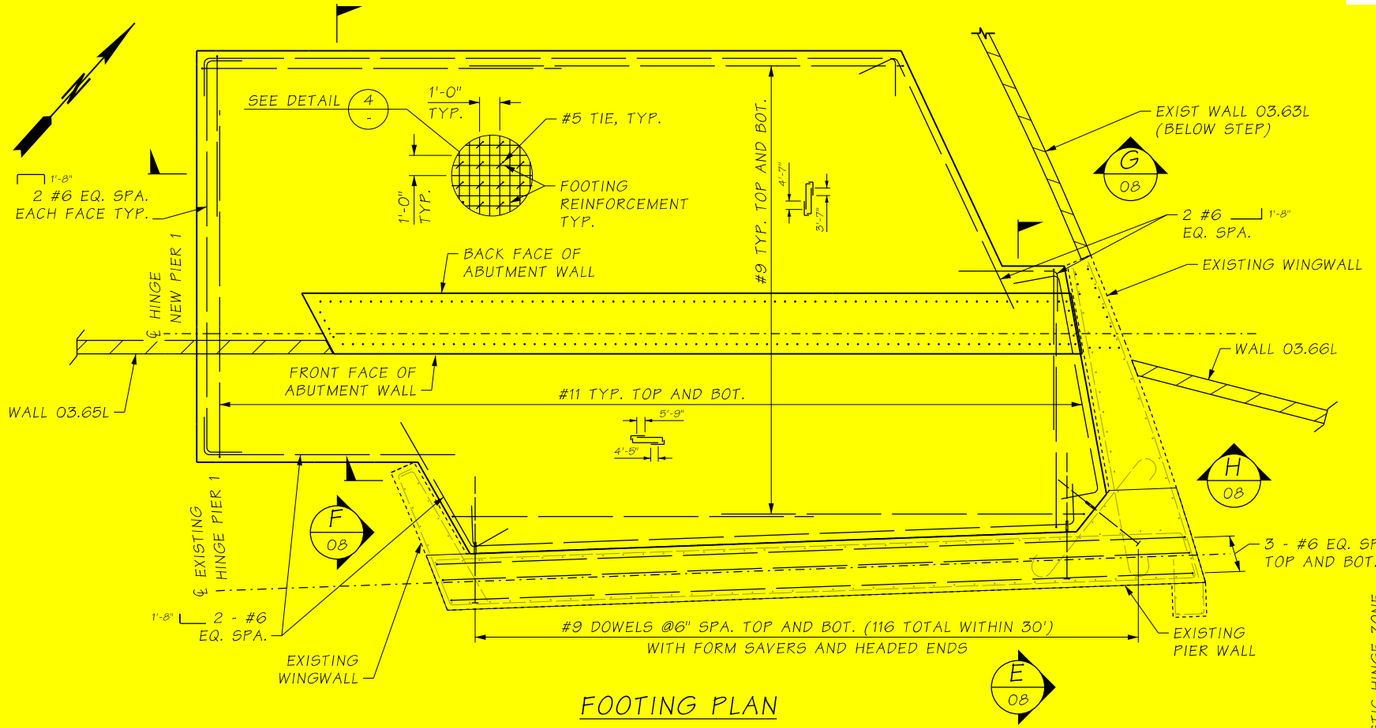
BRIDGE 405/17.7 - RENTON AVE OVER I-405

PIER 1
PLAN AND ELEVATION

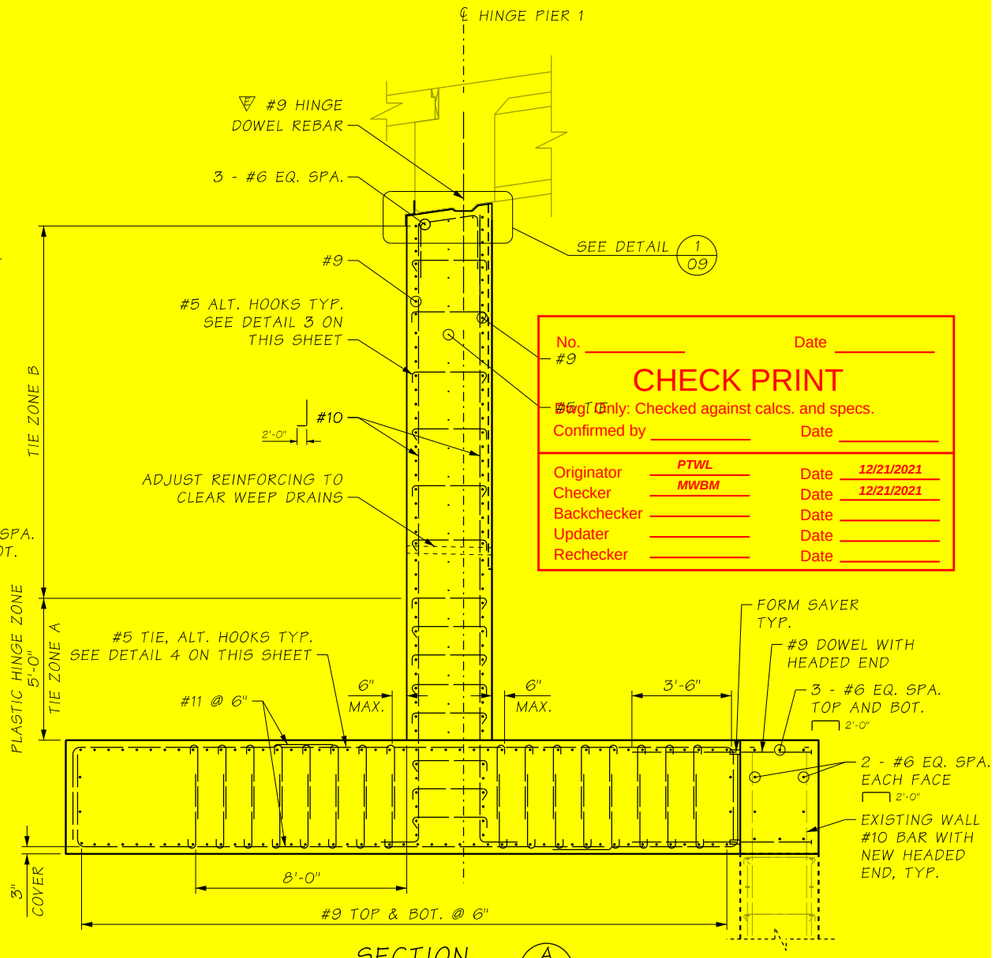
PLAN REF. NO. BG17.7-06

SHEET OF SHEETS

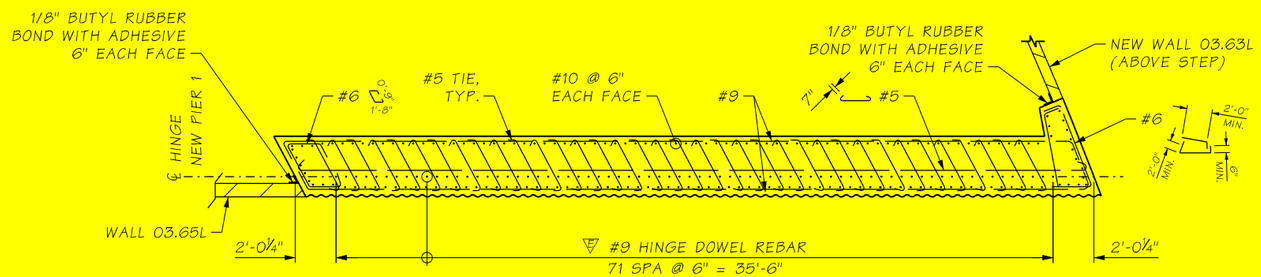
I-405 FILE NO. 9242 SHEET



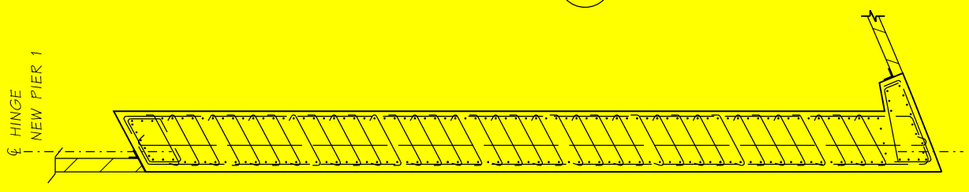
FOOTING PLAN



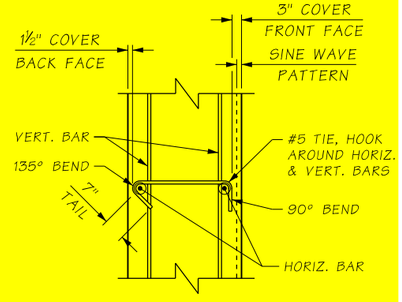
SECTION A 06



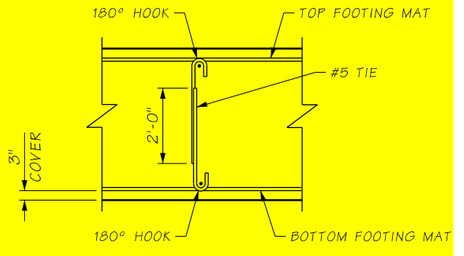
SECTION B 06



SECTION C 06
SEE SECTION B FOR DETAILS NOT SHOWN



DETAIL 3
ALTERNATE 135° BEND EVERY OTHER TIE. -. 06



DETAIL 4 -

No. _____ Date _____
#9
CHECK PRINT
#9 Only: Checked against calcs. and specs.
Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_07_DE_BG_BR17.7-Pier1Det1.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	R. GARG				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN				CONTRACT NO. C9242				
Current Revision By:									
Date:	12/20/2021								
Time:	10:45:02 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN STATE OF WASHINGTON 49064 STRUCTURAL ENGINEER PROFESSIONAL ENGINEER
DATE
E.O.R. 1 STAMP BOX

DATE
E.O.R. 2 STAMP BOX

Washington State Department of Transportation
FLATIRON LANE
wood. COWI

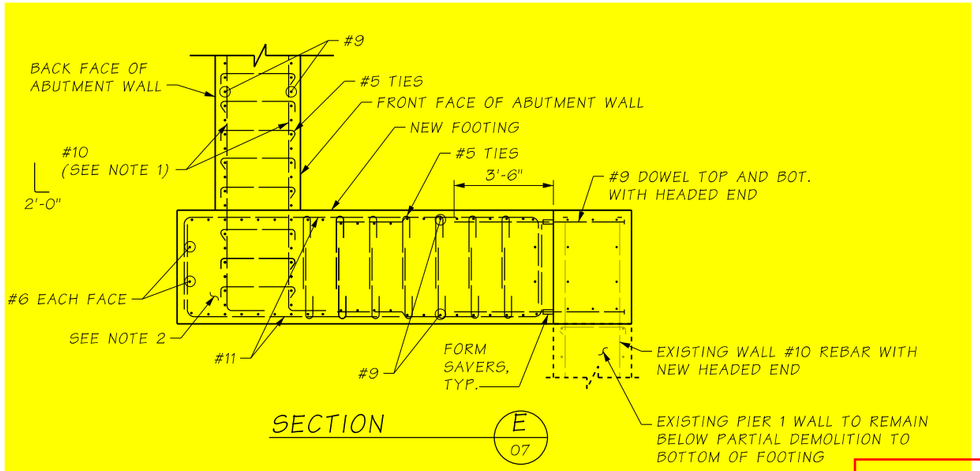
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

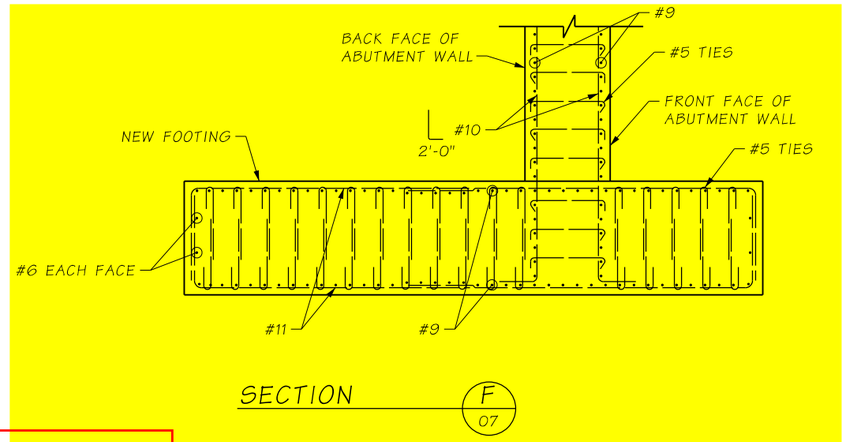
PIER 1
DETAILS 1 OF 3

PLAN REF. NO. BG17.7-07

SHEET OF SHEETS



SECTION E 07



SECTION F 07

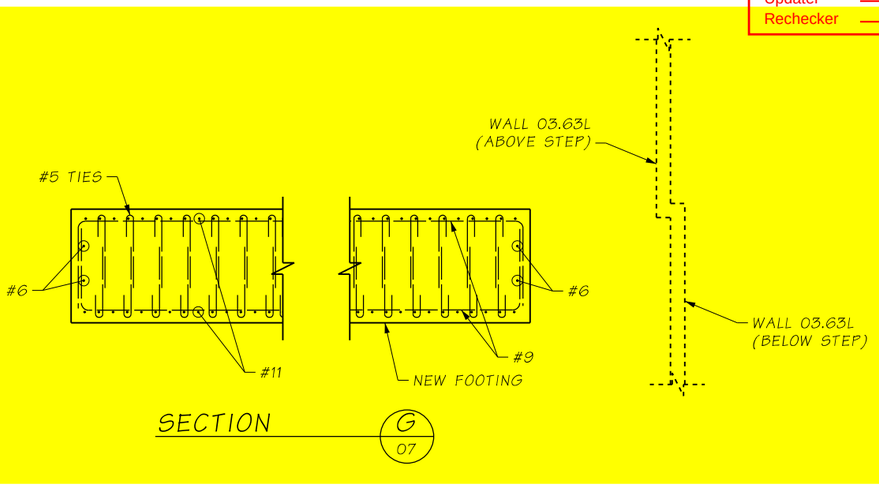
No. _____ Date _____

CHECK PRINT

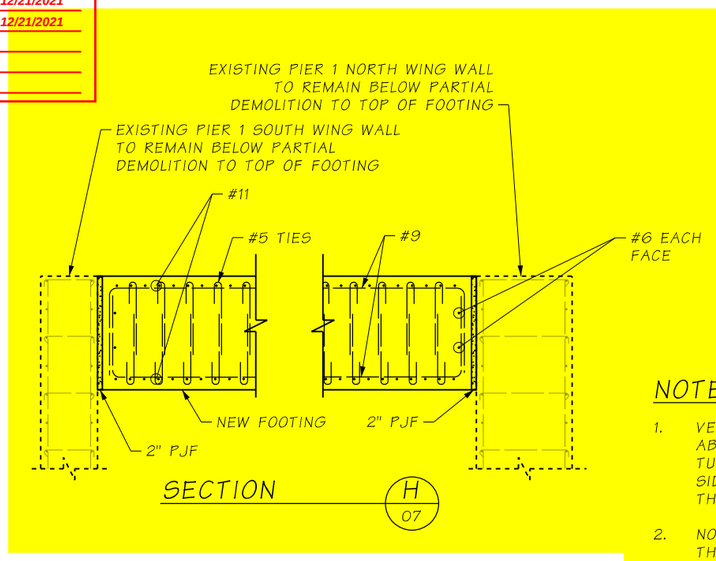
Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date



SECTION G 07



SECTION H 07

NOTES:

1. VERTICAL REBAR IN THE BACK OF ABUTMENT WALL TO HAVE THE 90° HOOK TURNED TOWARDS THE TOE SIDE (I405 SIDE) WHERE THE FOOTING HEEL IS LESS THAN 2 FT IN LENGTH.
2. NO #5 TIES ARE REQUIRED IN THE HEEL OF THE FOOTING WHERE THE FOOTING HEEL IS LESS THAN 2 FT IN LENGTH.
3. PARTIAL DEMOLITION OF EXISTING ABUTMENT WALL AND WINGWALLS SHALL BE IN ACCORDANCE WITH STD. SPEC. 2-02.3(2)A2.

I-405 FILE NO. 9242 SHEET

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_08_DE_BG_BR17.7-Pier1Det2.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	R. GARG				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/16/2021								
Time:	2:41:50 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49064 — REGISTERED PROFESSIONAL ENGINEER — STRUCTURAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

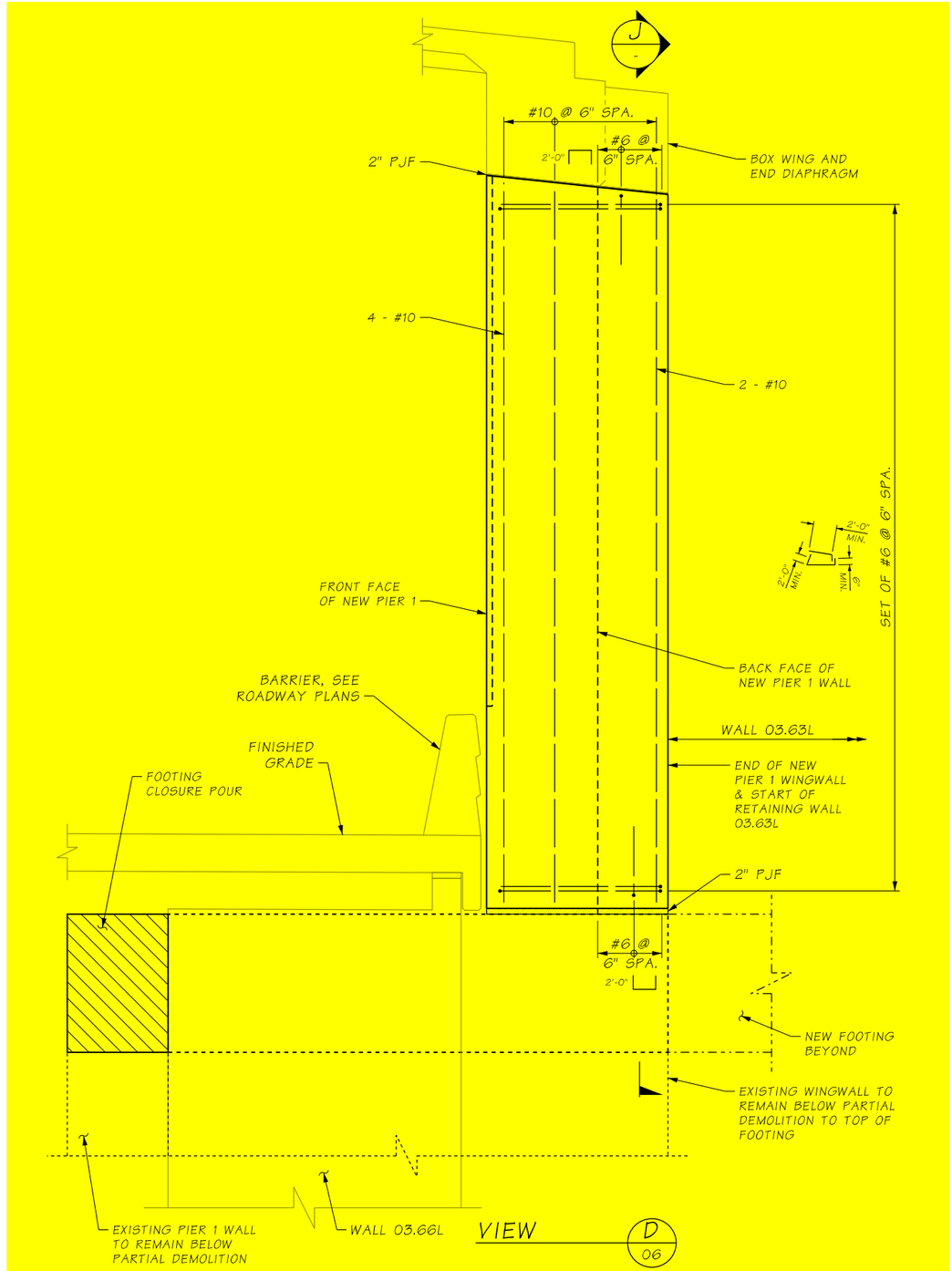
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

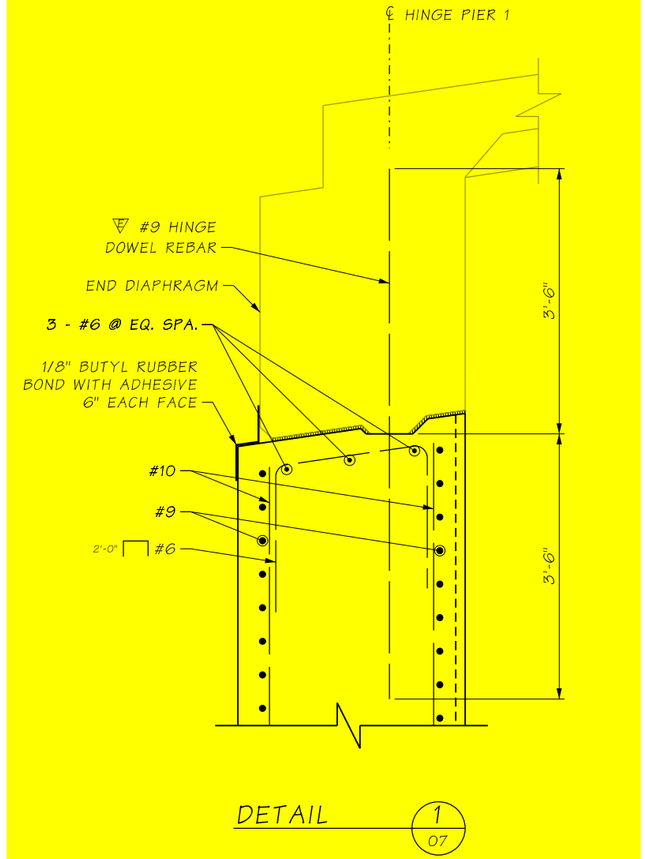
BRIDGE 405/17.7 - RENTON AVE OVER I-405

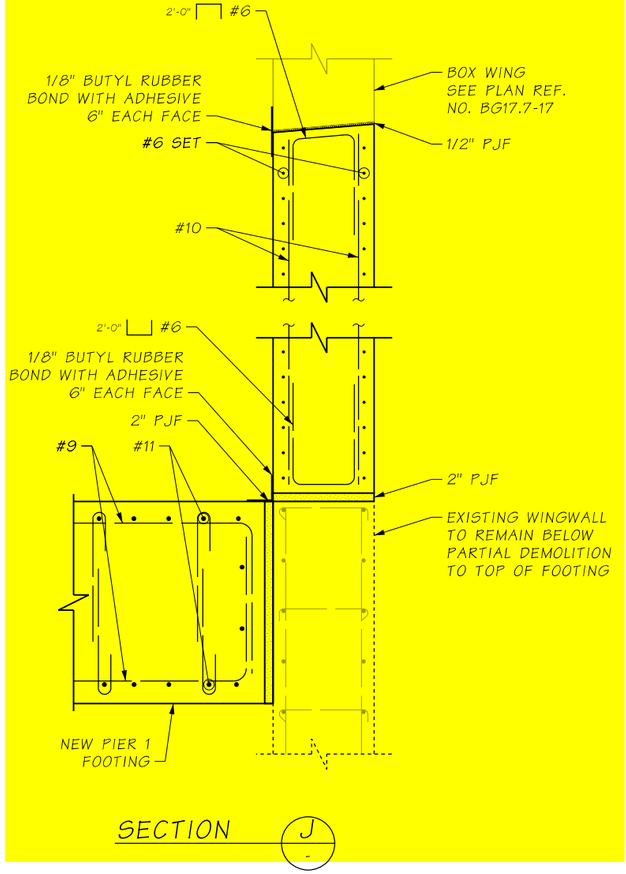
PIER 1
DETAILS 2 OF 3

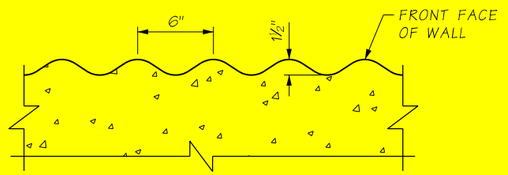
PLAN REF. NO. BG17.7-08

SHEET OF SHEETS









SINE WAVE PATTERN

PATTERN SHALL HAVE A RANDOM CHISELED FINISH WITH 1/8" MAXIMUM RELIEF

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_09_DE_BG_BR17.7-Pier1Det3.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD				REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	R. GARG					10	WASH.			
Checked By:	M. BAUGHMAN					JOB NUMBER XL5467				
Detailed By:	J. MILNE									
Current Revision By:										
Date:	12/20/2021					CONTRACT NO. C9242				
Time:	10:48:05 AM	DESCRIPTION	DATE	NO						

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49064 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

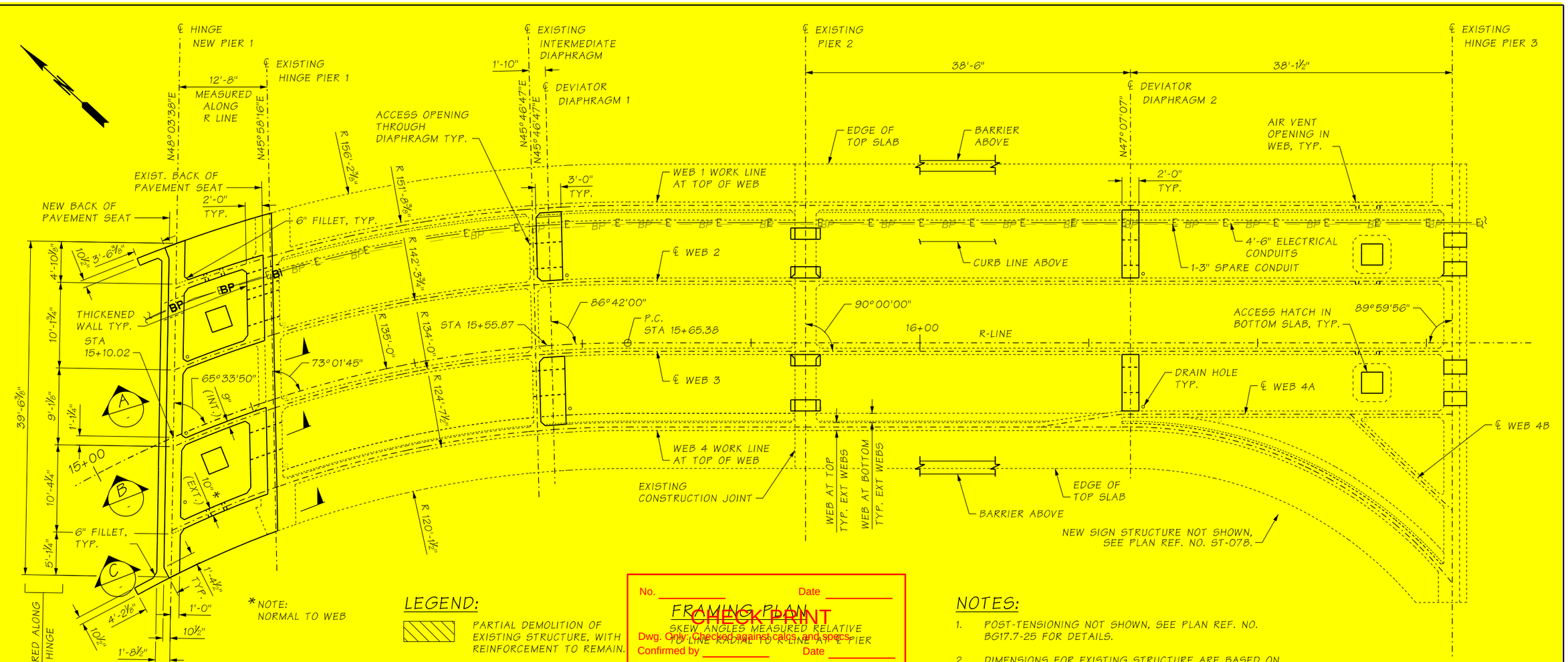
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

PIER 1 DETAILS 3 OF 3

PLAN REF. NO. BG17.7-09

SHEET OF SHEETS



LEGEND:

PARTIAL DEMOLITION OF EXISTING STRUCTURE, WITH REINFORCEMENT TO REMAIN.

PARTIAL DEMOLITION OF EXISTING STRUCTURE, WITH REINFORCEMENT REMOVED.

No. _____ Date _____

FRAMING PLAN

SKEW ANGLES MEASURED RELATIVE TO LINE RADIAL TO ℄ HINGE AT ℄ PIER

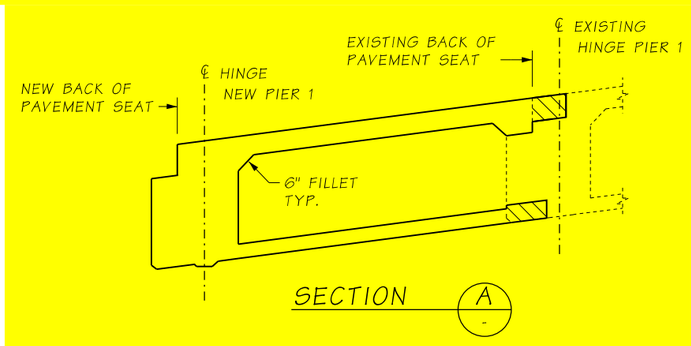
CHECK PRINT

Dwg. Only - Checked against calcs and specs

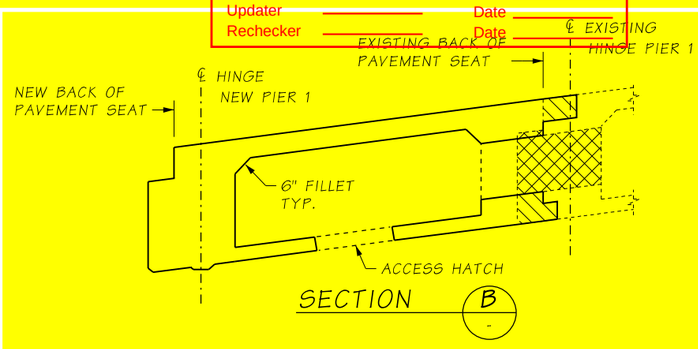
Confirmed by	_____	Date _____
Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker	_____	Date _____
Updater	_____	Date _____
Rechecker	_____	Date _____

NOTES:

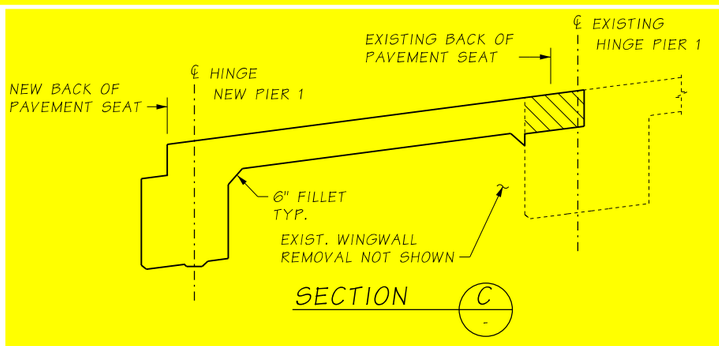
1. POST-TENSIONING NOT SHOWN, SEE PLAN REF. NO. BG17.7-25 FOR DETAILS.
2. DIMENSIONS FOR EXISTING STRUCTURE ARE BASED ON ORIGINAL CONSTRUCTION RECORDS AND SITE SURVEYS AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR.



SECTION A



SECTION B



SECTION C

FILE NO. 9242 SHEET I-405

c:\users\jagn\documents\projectwise\workingdir\wsdot\dms22941\XL5467_10_DE_BG_BR17.7-FramePlan.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/15/2021								
Time:	4:04:05 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 39664 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

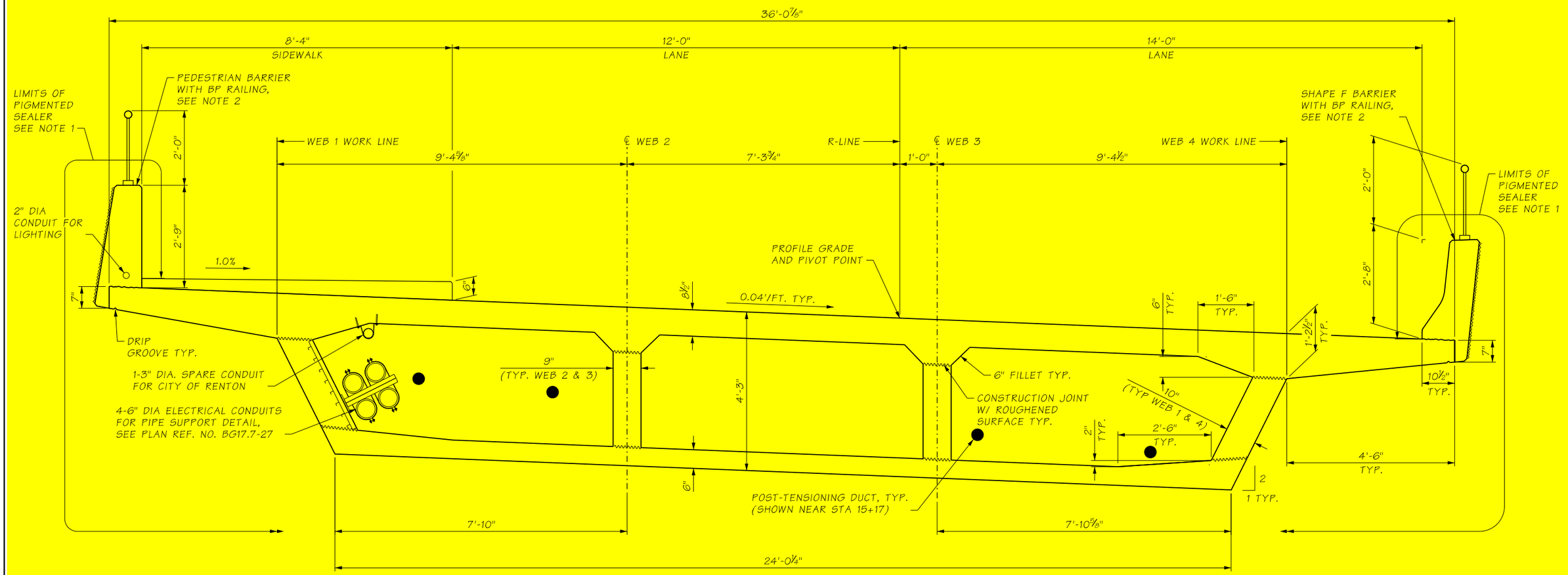
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

FRAMING PLAN

PLAN REF. NO. BG17.7-10

SHEET OF SHEETS



TYPICAL SECTION

(LOOKING UP ON STATION)
(DIMENSIONS SHOWN ARE PERPENDICULAR TO BASELINE)

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.
Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	

NOTES:

1. PIGMENTED SEALER SHALL BE APPLIED TO NEW PORTION OF BOX GIRDER AS SHOWN. COLOR SHALL BE MT. ST. HELENS. SEALER LIMITS SHALL EXTEND TO FRONT FACE OF EXISTING PIER 1.
2. EXTERIOR FACES OF PEDESTRIAN BARRIER AND SHAPE F BARRIER SHALL HAVE FRACTURED FIN FINISH TO MATCH EXISTING.
3. BRIDGE DECK TEXTURING FOR ROADWAY SHALL BE IN THE TRANSVERSE DIRECTION TO MATCH EXISTING BRIDGE DECK TO REMAIN, AND IN ACCORDANCE WITH SECTION 6-02.3(10)D5 OF THE WSDOT STANDARD SPECIFICATIONS.
4. FOR BRIDGE DECK FINISH UNDER SIDEWALK, SEE PLAN REF. NO. BG17.7-28.
5. BOX GEOMETRY IS TO MATCH EXISTING, CONTRACTOR TO FIELD VERIFY.

I-405 FILE NO. 9242 SHEET

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_11_DE_BG_BR17.7-TypSect.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/6/2021								
Time:	4:16:52 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49064 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER
DATE
E.O.R. 1 STAMP BOX

DATE
E.O.R. 2 STAMP BOX

Washington State Department of Transportation
FLATIRON LANE
wood. COWI

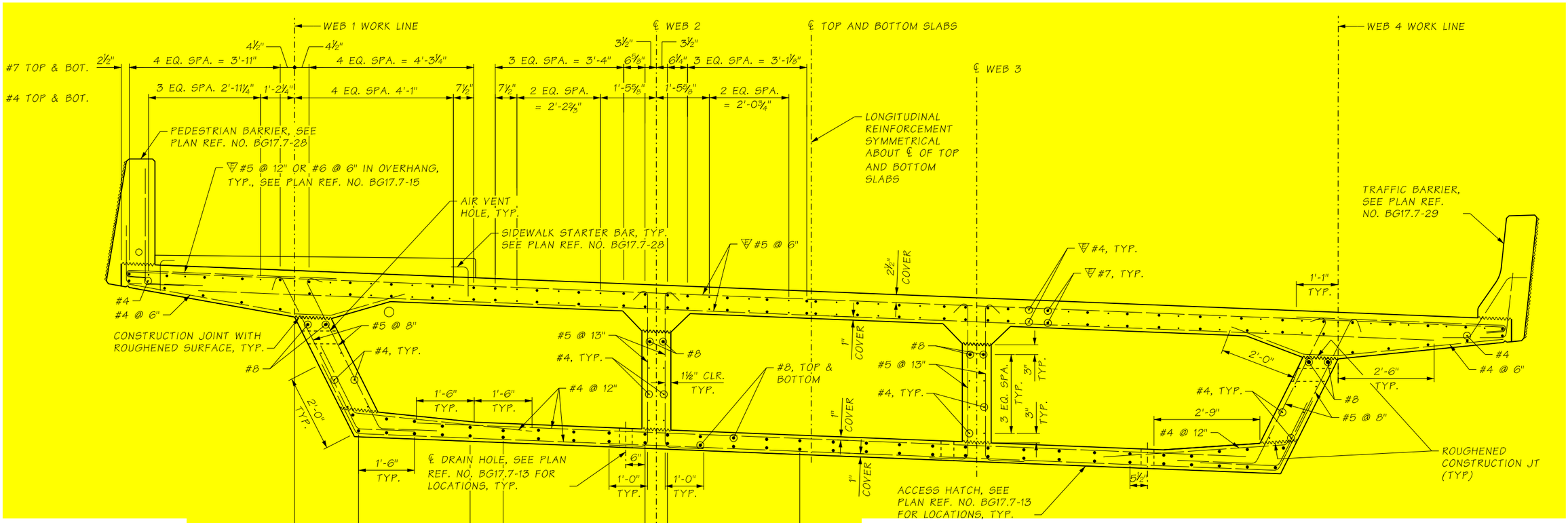
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

TYPICAL SECTION

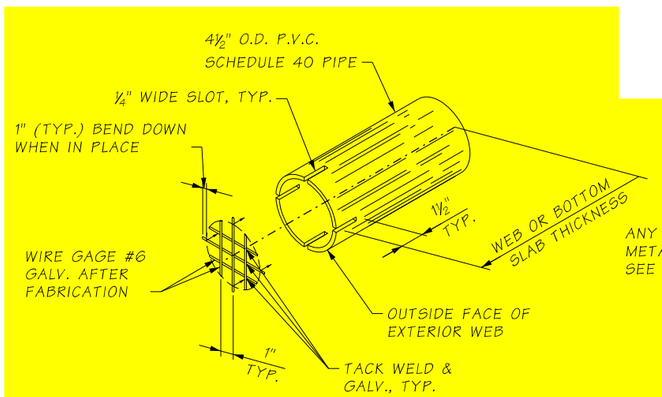
PLAN REF. NO. BG17.7-11

SHEET OF SHEETS

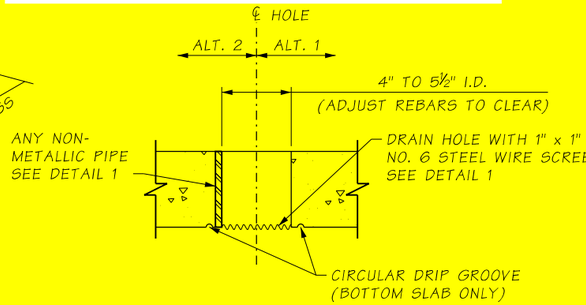


TYPICAL SECTION - REINFORCEMENT

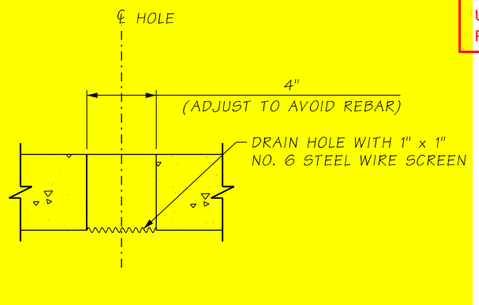
(LOOKING UP ON STATION)
(DIMENSIONS SHOWN ARE PERPENDICULAR TO R-LINE)



DETAIL 1



BOTTOM SLAB DRAIN HOLE AND WEB AIR VENT HOLE IN NEW BOX



BOTTOM SLAB DRAIN HOLE AND WEB AIR VENT HOLE IN EXISTING BOX

NOTES:

1. POST-TENSIONING AND ELECTRICAL CONDUIT NOT SHOWN.
2. TRANSVERSE REINFORCEMENT SHALL BE PLACED PARALLEL TO THE EXISTING ℄ OF PIER 1, WITH SPACING MEASURED ALONG ℄ OF BOX.
3. LONGITUDINAL REINFORCEMENT SPACING IS MEASURED AT EACH END OF NEW BOX. ADJUST AS REQUIRED TO SPLICE WITH EXISTING REINFORCEMENT.

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.
Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

FILE NO. 9242 SHEET _____ I-405

c:\users\mkoi\documents\projectwise\workingdir\wsdot\dms22941\XL5467_12_DE_BG_BR17.7-GirdDet1.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	P. CONRAD								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	8:54:39 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 39864 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER
DATE
E.O.R. 1 STAMP BOX

DATE
E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE
wood. COWI

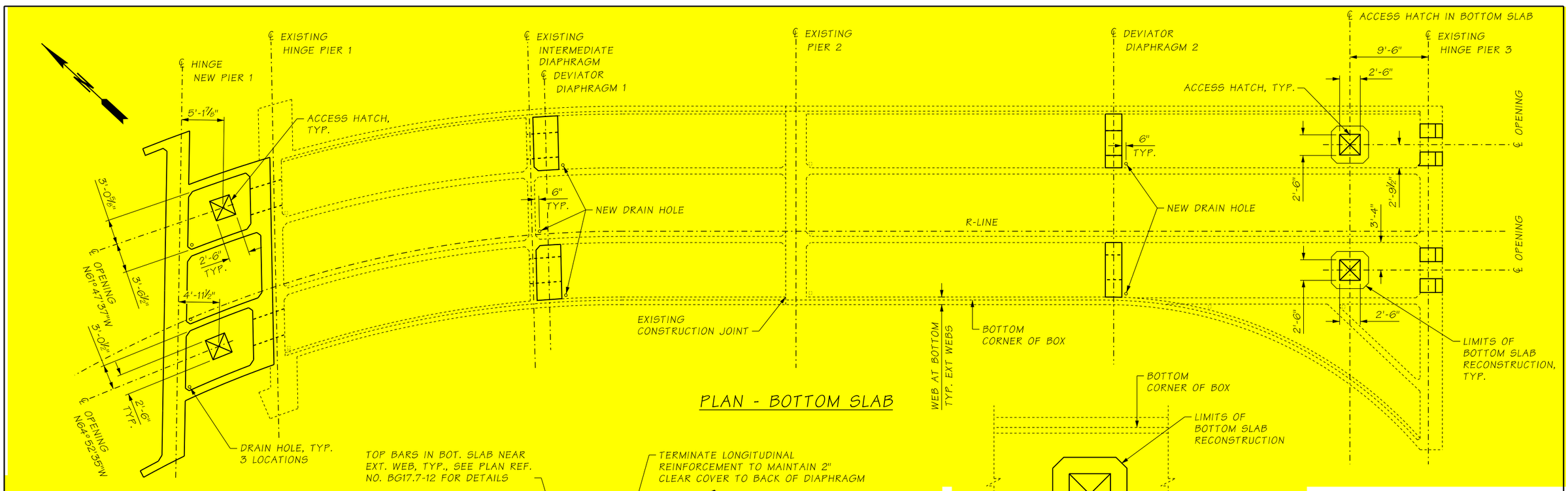
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

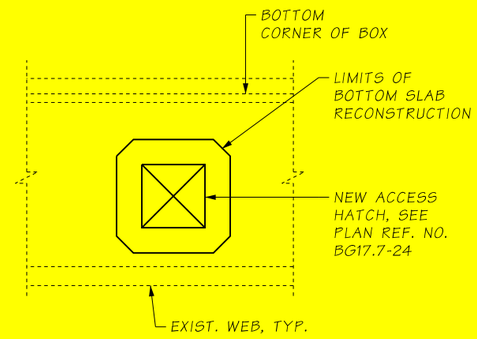
CONCRETE BOX DETAILS 1 OF 13

PLAN REF. NO. BG17.7-12

SHEET _____ OF _____ SHEETS



PLAN - BOTTOM SLAB



BOTTOM SLAB ACCESS HATCH REINFORCEMENT

PLAN - BOTTOM SLAB REINFORCEMENT

(EXIST. PIER AND NEW PIER 1 DIAPHRAGM REINFORCEMENT NOT SHOWN FOR CLARITY, SEE PLAN REF. NO. BG17.7-16 AND BG17.7-18 FOR DETAILS.)

NOTES:

1. TRIM TYPICAL LONGITUDINAL AND TRANSVERSE REINFORCEMENT TO MAINTAIN 1" CLEAR COVER TO ACCESS HATCH. NUMBER OF REINFORCING BARS CUT AT OPENINGS SHALL BE KEPT AT A MINIMUM. DEFLECT AS MANY BARS AS POSSIBLE AROUND OPENINGS.
2. LONGITUDINAL REINFORCEMENTS SHALL BE BENT ON SITE TO MAINTAIN CONSTANT CONCRETE COVER AND REBAR SPACING (±1") ALONG THE ENTIRE LENGTH.
3. LONGITUDINAL REINFORCEMENT IN BOTTOM SLAB SHALL BE SPLICED WITH LONGITUDINAL REINFORCEMENT IN THE EXISTING STRUCTURE USING MECHANICAL COUPLERS. HOOKS IN EXISTING REINFORCEMENT MAY BE CUT AS NECESSARY. SEE PLAN REF. NO. BG17.7-18 FOR DETAILS.
4. ADJUST SPACING OF BARS LOCALLY TO AVOID DRAIN HOLES.
5. FOR BOTTOM SLAB DRAIN HOLE DETAIL, SEE PLAN REF. NO. BG17.7-12.

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

FILE NO. 9242 SHEET _____ I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_13_DE_BG_BR17.7-GirdDet2.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/16/2021								
Time:	2:52:50 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 21604 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

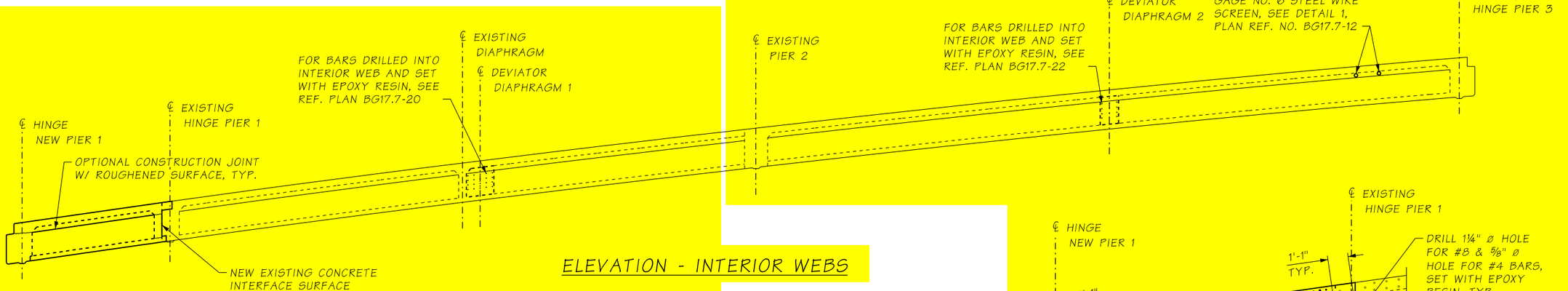
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

CONCRETE BOX DETAILS 2 OF 13

PLAN REF. NO. BG17.7-13

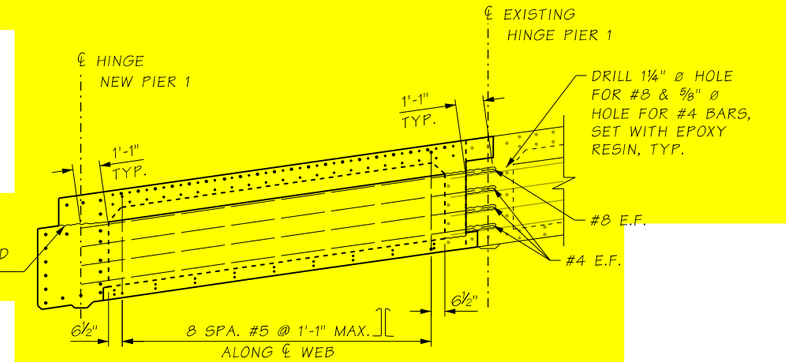
SHEET _____ OF _____ SHEETS



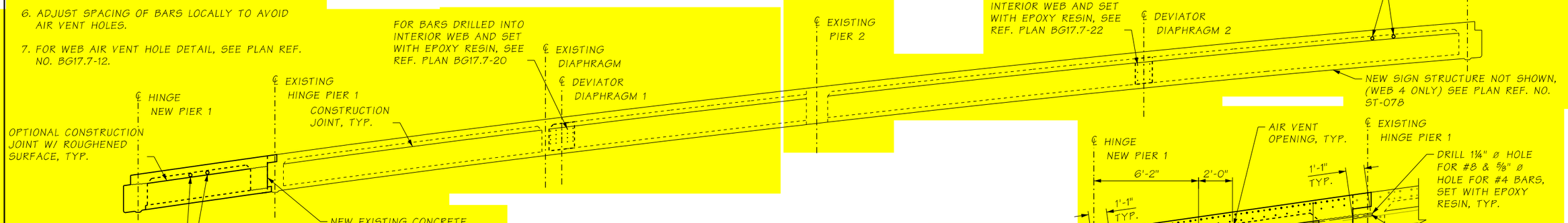
ELEVATION - INTERIOR WEBS

NOTES:

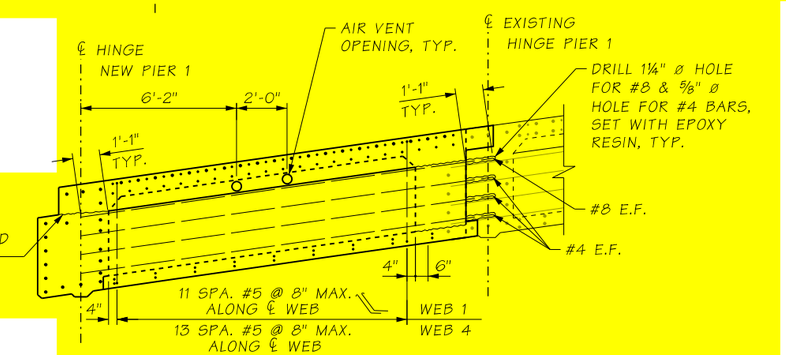
1. CONTRACTOR SHALL AVOID DAMAGE TO EXISTING STEEL REINFORCEMENT DURING DRILLING OPERATIONS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF ANY EXISTING REBAR OR ANCHOR BOLTS ARE DAMAGED.
2. CORE DRILLING IS PERMISSIBLE FOR NEW AIR VENT OPENINGS IN EXISTING BOX. SEE NOTE 1.
3. DRILLED HOLES SHALL HAVE A MINIMUM DISTANCE TO EDGE OF CONCRETE OF 4 INCHES.
4. INTERIOR WEB STIRRUPS SHALL BE VERTICAL, EXTERIOR WEB STIRRUPS SHALL BE IN PLANE OF WEB.
5. WEB LONGITUDINAL BARS SHALL BE BENT TO MAINTAIN CONSTANT CONCRETE COVER AND SPACING (±1") ALONG THE ENTIRE LENGTH.
6. ADJUST SPACING OF BARS LOCALLY TO AVOID AIR VENT HOLES.
7. FOR WEB AIR VENT HOLE DETAIL, SEE PLAN REF. NO. BG17.7-12.



INTERIOR WEBS REINFORCEMENT



ELEVATION - EXTERIOR WEBS



EXTERIOR WEBS REINFORCEMENT

(WEBS 1 AND 4)

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

FILE NO. 9242 SHEET I-405

c:\users\mkol\documents\projectwise\workingdir\wsdot\dms22941\XL5467_14_DE_BG_BR17.7-GirdDet3.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	10:06:44 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49664 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

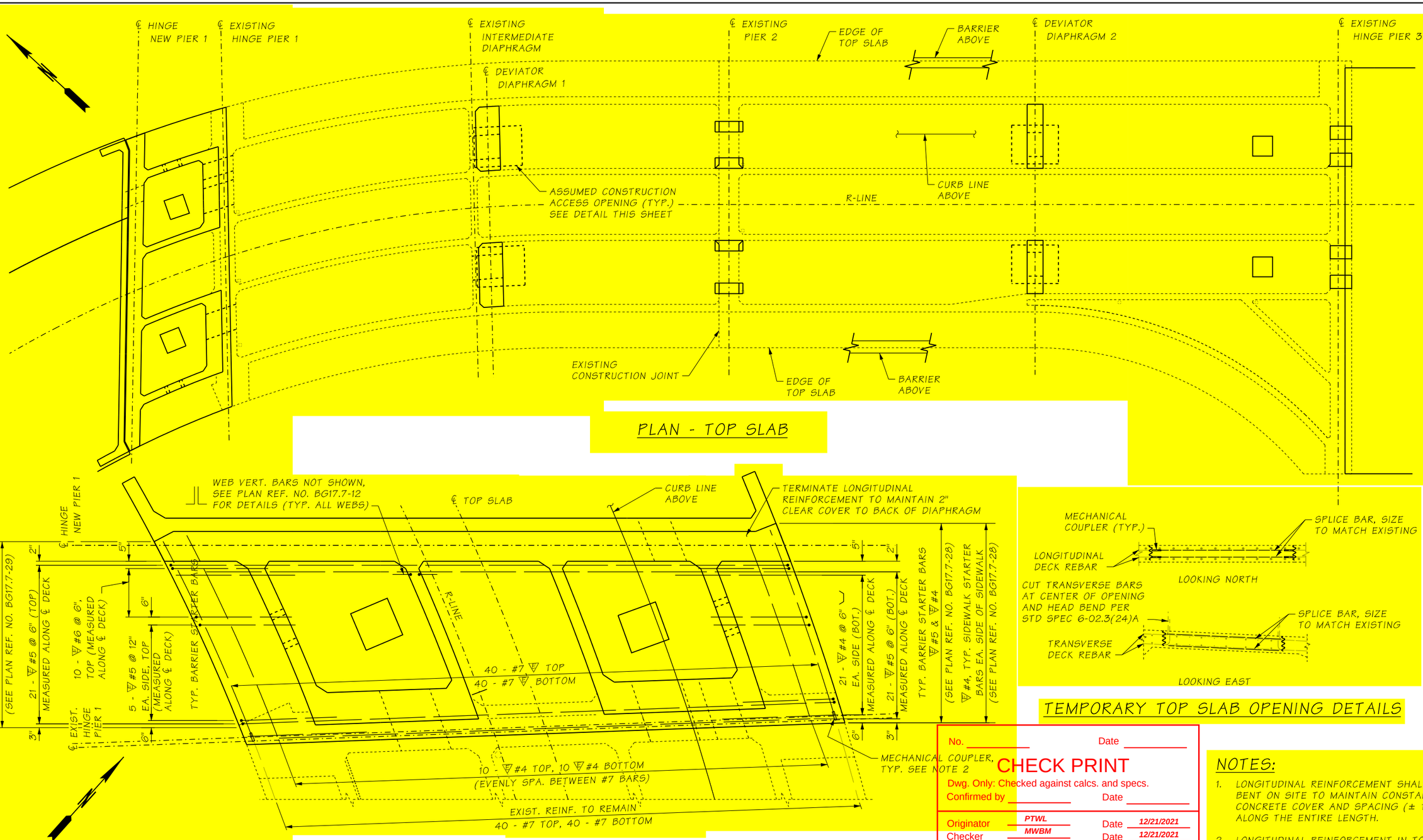
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

CONCRETE BOX DETAILS 3 OF 13

PLAN REF. NO. BG17.7-14

SHEET OF SHEETS



PLAN - TOP SLAB

PLAN - TOP SLAB REINFORCEMENT

(EXISTING PIER 1 AND NEW PIER 1 DIAPHRAGM REINFORCEMENT NOT SHOWN FOR CLARITY, SEE PLAN REF. NO. BG17.7-16 AND BG17.7-18 FOR DETAILS.)

TEMPORARY TOP SLAB OPENING DETAILS

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL / MWBM	Date 12/21/2021
Checker		Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

NOTES:

1. LONGITUDINAL REINFORCEMENT SHALL BE BENT ON SITE TO MAINTAIN CONSTANT CONCRETE COVER AND SPACING (± 1") ALONG THE ENTIRE LENGTH.
2. LONGITUDINAL REINFORCEMENT IN TOP SLAB SHALL BE SPLICED WITH LONGITUDINAL REINFORCEMENT IN THE EXISTING STRUCTURE USING MECHANICAL COUPLERS. SEE PLAN REF. NO. BG17.7-18 FOR DETAILS.

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_15_DE_BG_BR17.7-GirdDet4.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD		REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU			10	WASH.			
Checked By:	M. BAUGHMAN			JOB NUMBER XL5467				
Detailed By:	J. GANASSIN							
Current Revision By:				CONTRACT NO. C9242				
Date:	12/20/2021							
Time:	11:22:57 AM	DESCRIPTION	DATE NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49064 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

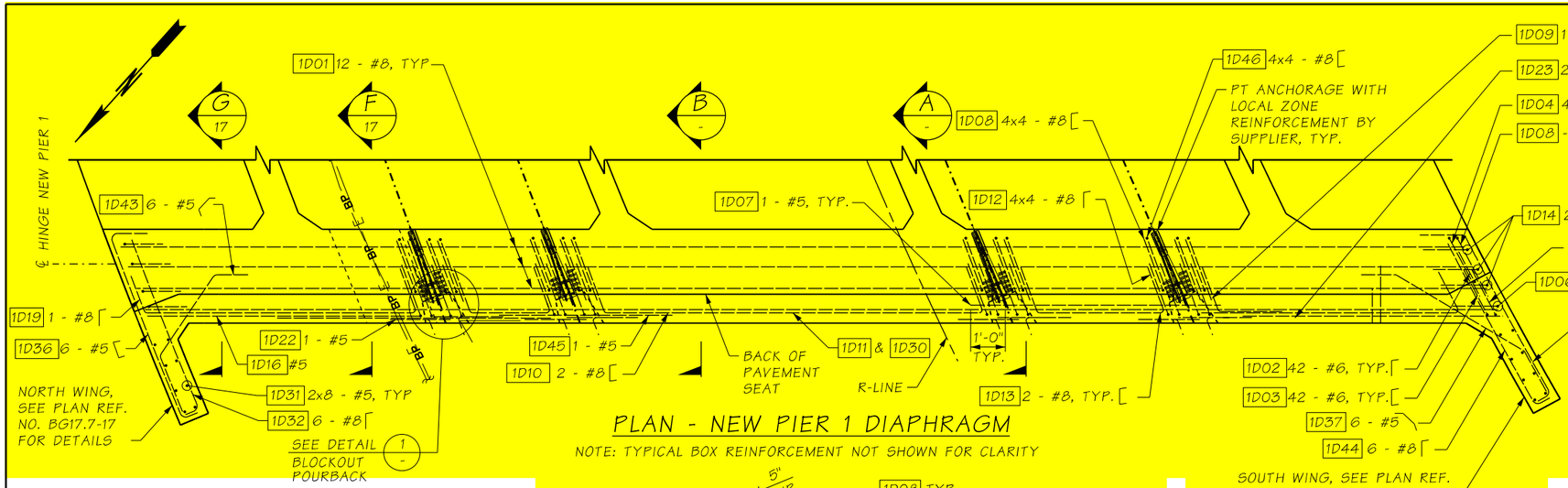
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

CONCRETE BOX DETAILS 4 OF 13

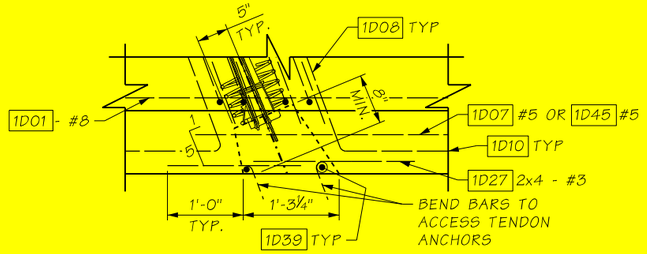
PLAN REF. NO. BG17.7-15

SHEET OF SHEETS

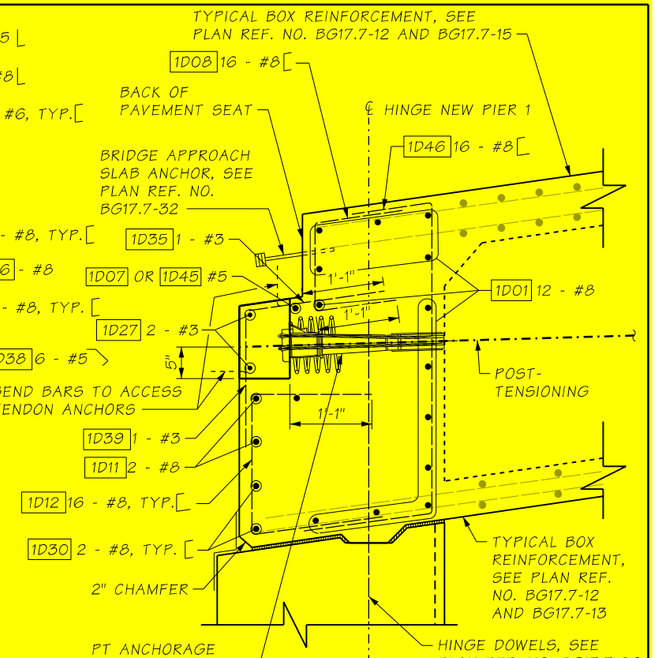


PLAN - NEW PIER 1 DIAPHRAGM

NOTE: TYPICAL BOX REINFORCEMENT NOT SHOWN FOR CLARITY

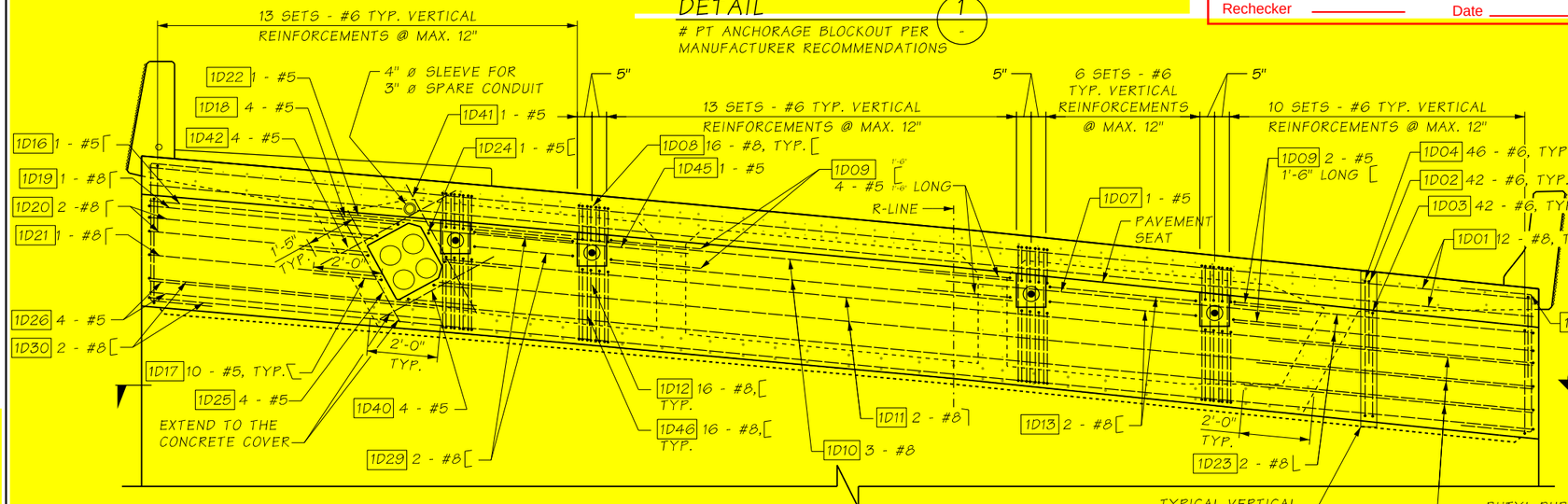


DETAIL 1 - # PT ANCHORAGE BLOCKOUT PER MANUFACTURER RECOMMENDATIONS

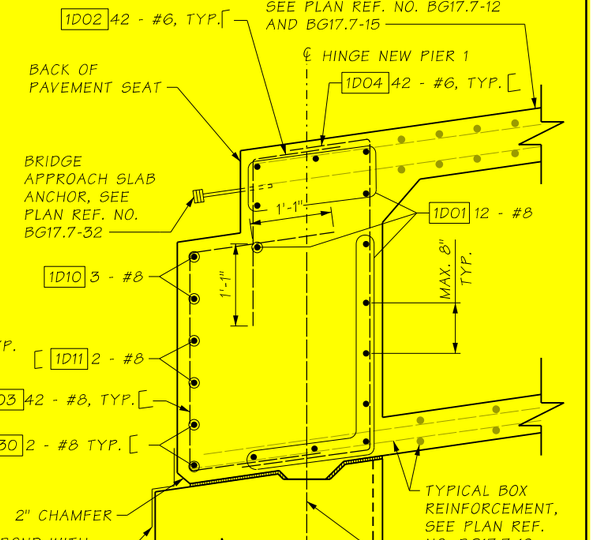


SECTION A - TYPICAL AT PT ANCHORAGES

TYPICAL BOX REINFORCEMENT, SEE PLAN REF. NO. BG17.7-12 AND BG17.7-15



ELEVATION - NEW PIER 1 DIAPHRAGM



SECTION B - TYPICAL BETWEEN WEBS, AWAY FROM PT ANCHORAGES

NOTES:

1. FOR PT ANCHORAGE LOCATIONS, SEE REF. NO. PLAN BG17.7-25.
2. FOR CONDUIT OPENING DETAILS SEE PLAN REF. NO. BG17.7-27.

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_16_DE_BG_BR17.7-GirdDet5.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/21/2021								
Time:	8:14:35 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 21654 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE wood. COWI

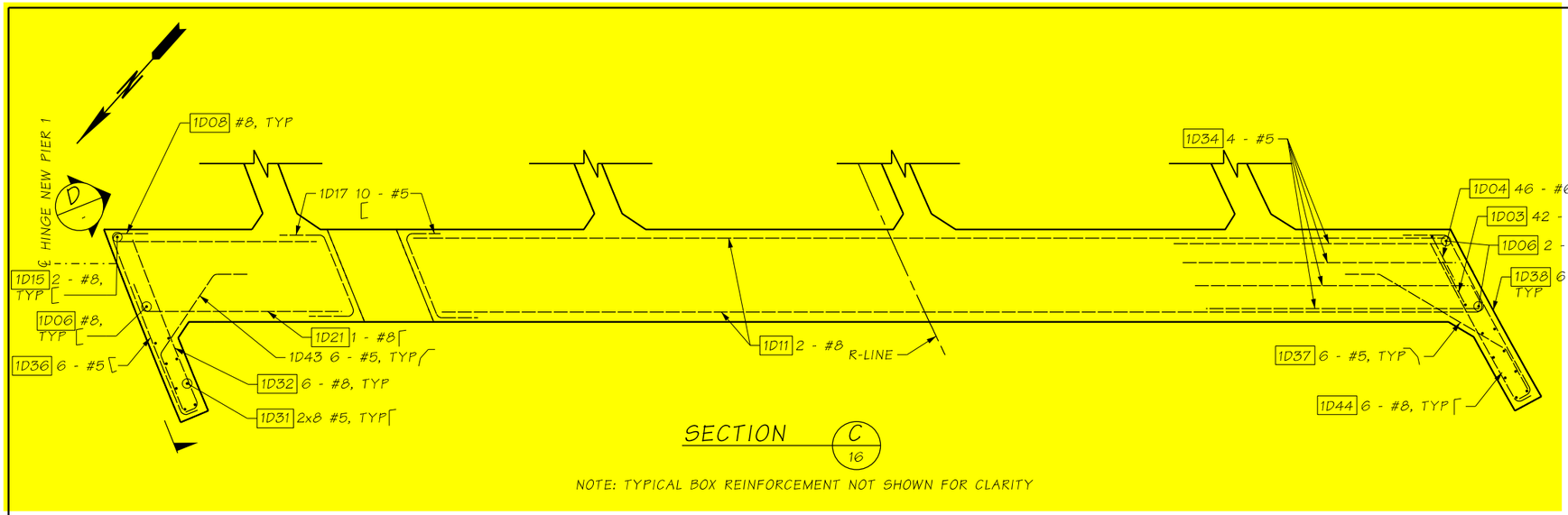
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

CONCRETE BOX DETAILS 5 OF 13

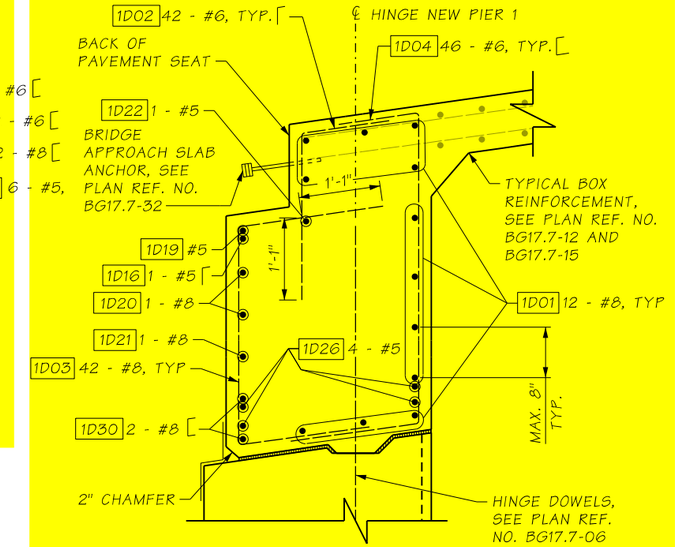
PLAN REF. NO. BG17.7-16

SHEET OF SHEETS



SECTION C 16

NOTE: TYPICAL BOX REINFORCEMENT NOT SHOWN FOR CLARITY



SECTION G 16
TYPICAL OUTSIDE WEBS

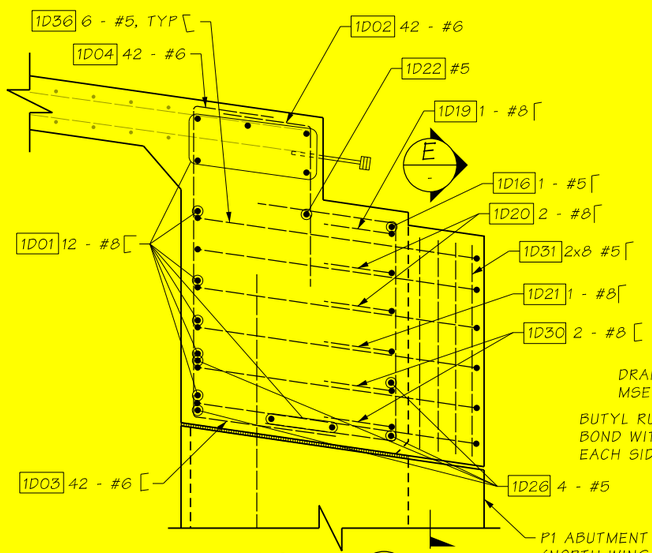
No. _____ Date _____

CHECK PRINT

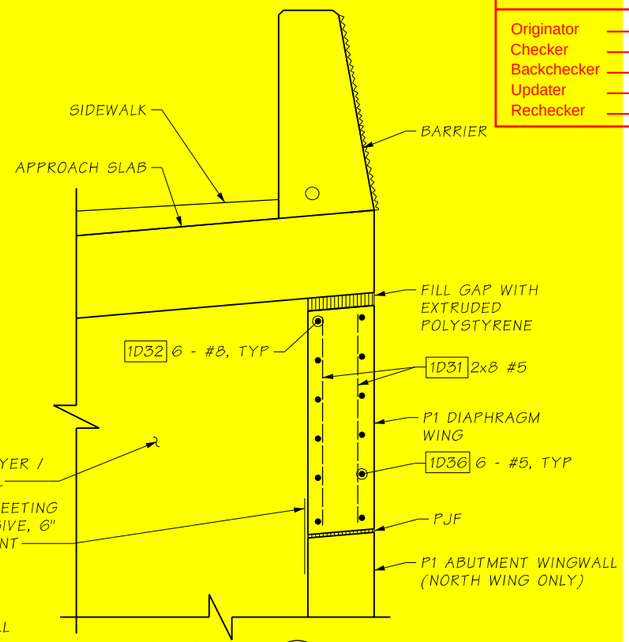
Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

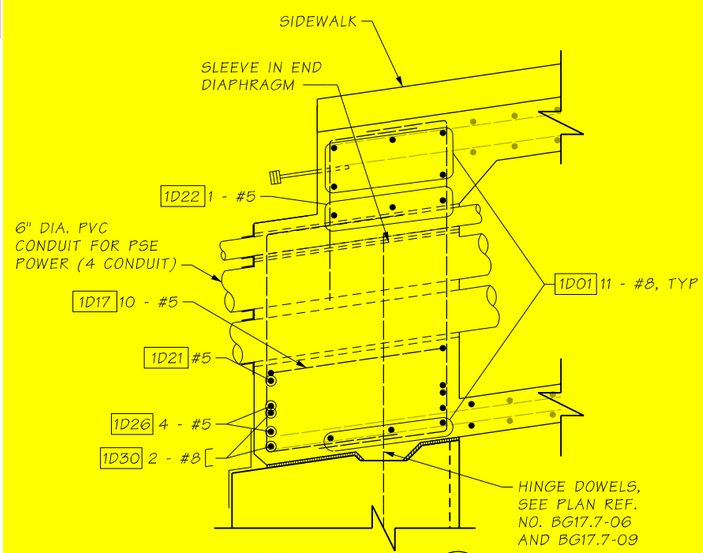
Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	



SECTION D 16
NORTH WING SHOWN, SOUTH WING SIMILAR



SECTION E -
NORTH WING SHOWN, SOUTH WING SIMILAR



SECTION F 16
UTILITY CONDUIT OPENING

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_17_DE_BG_BR17.7-GirdDet6.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	12:06:38 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49664 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE wood. COWI

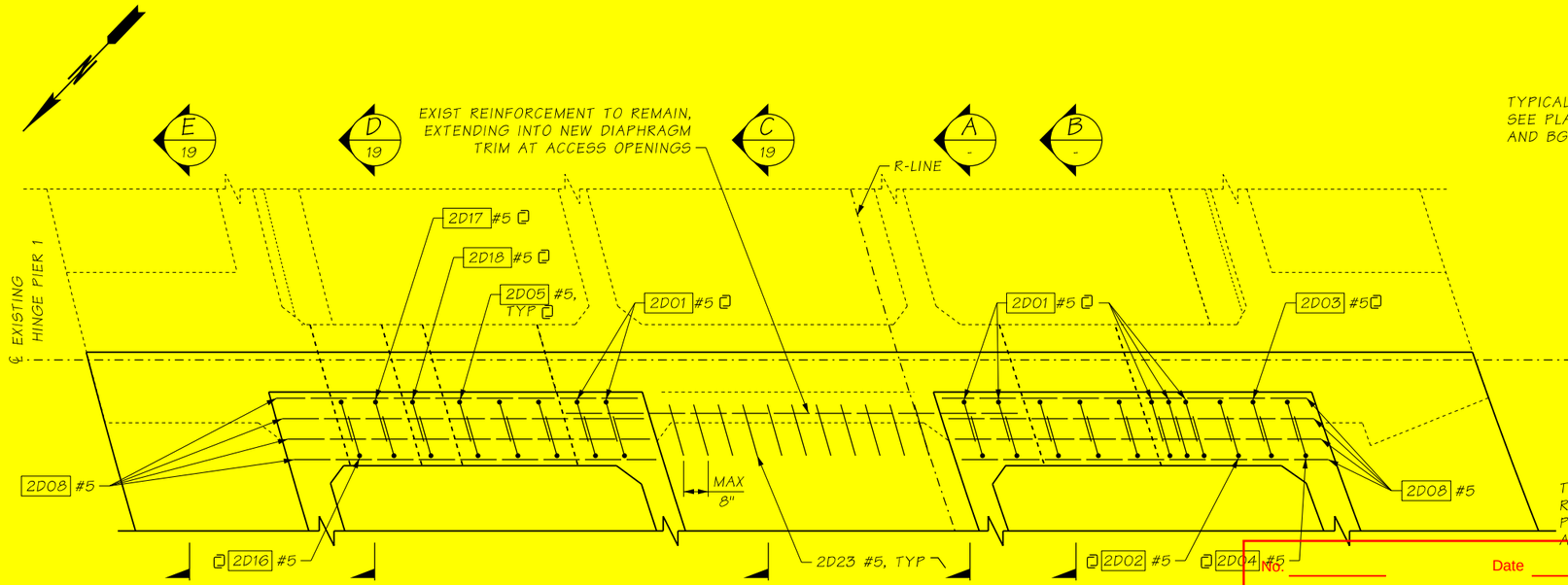
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

CONCRETE BOX DETAILS 6 OF 13

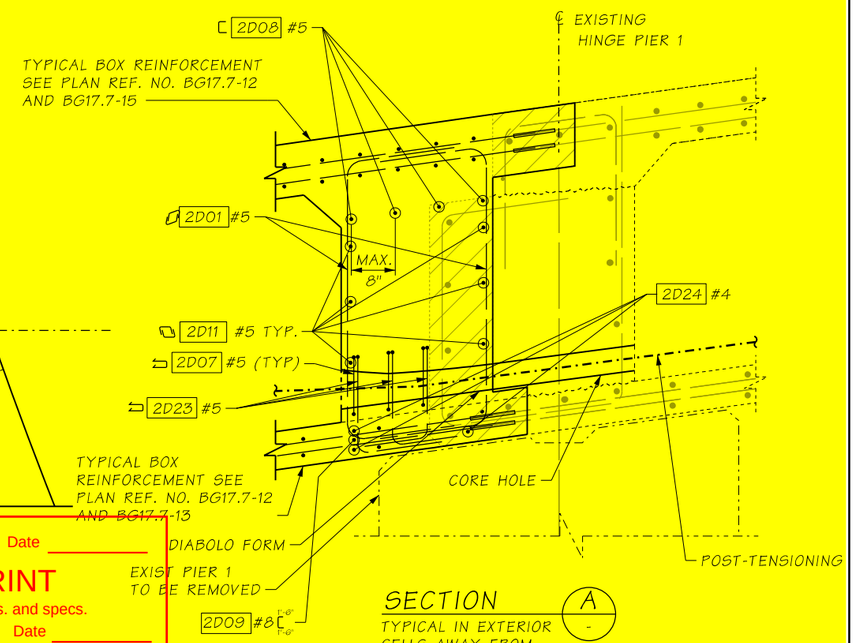
PLAN REF. NO. BG17.7-17

SHEET OF SHEETS



PLAN - EXISTING PIER 1 DIAPHRAGM

NOTE: TYPICAL BOX REINFORCEMENT NOT SHOWN FOR CLARITY



SECTION A

TYPICAL IN EXTERIOR CELLS AWAY FROM ACCESS OPENINGS

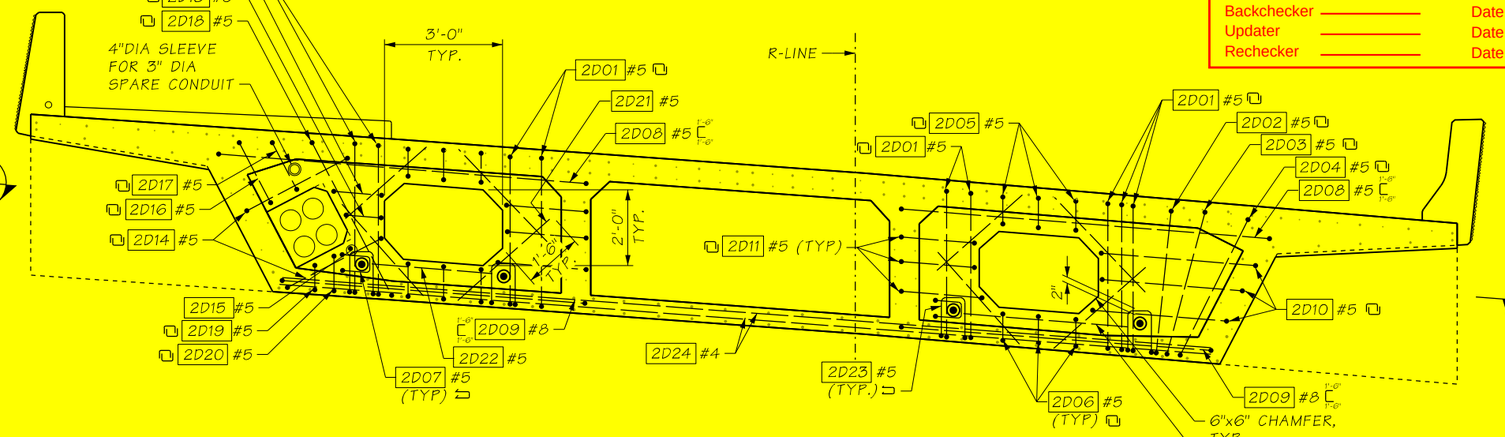
No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

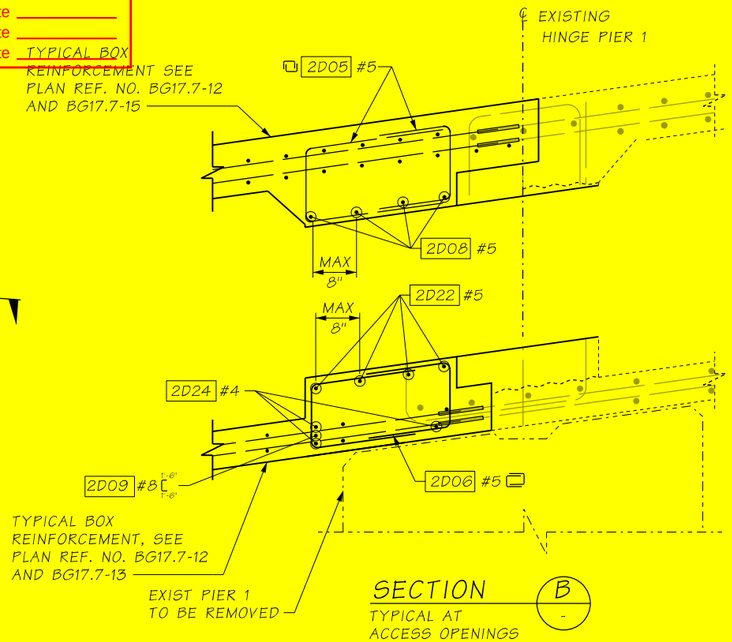
Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date



ELEVATION - EXISTING PIER 1 DIAPHRAGM

(EXISTING PIER 1 TO BE REMOVED, NOT SHOWN)



SECTION B

TYPICAL AT ACCESS OPENINGS

NOTES:

1. FOR LOCATION AND DETAILS OF PT DIABOLO FORM, SEE PLAN REF. NO. BG17.7-25

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_18_DE_BG_BR17.7-GirdDet7.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	12:14:47 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN STATE OF WASHINGTON 49664 PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

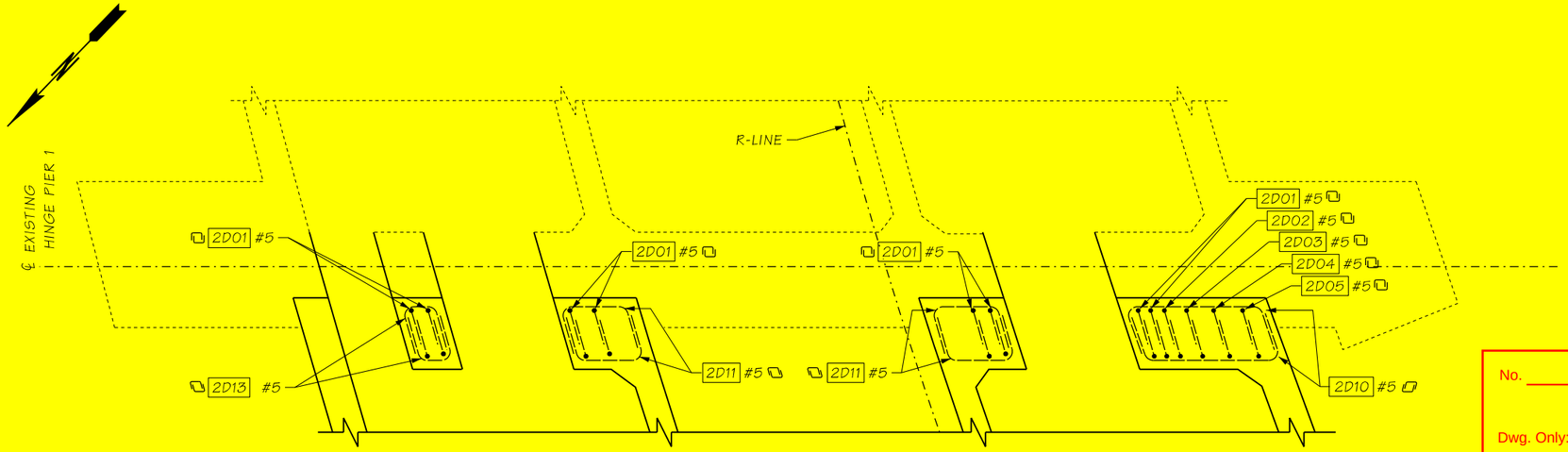
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

CONCRETE BOX DETAILS 7 OF 13

PLAN REF. NO. BG17.7-18

SHEET OF SHEETS



SECTION F 18

NOTE: TYPICAL BOX REINFORCEMENT NOT SHOWN FOR CLARITY

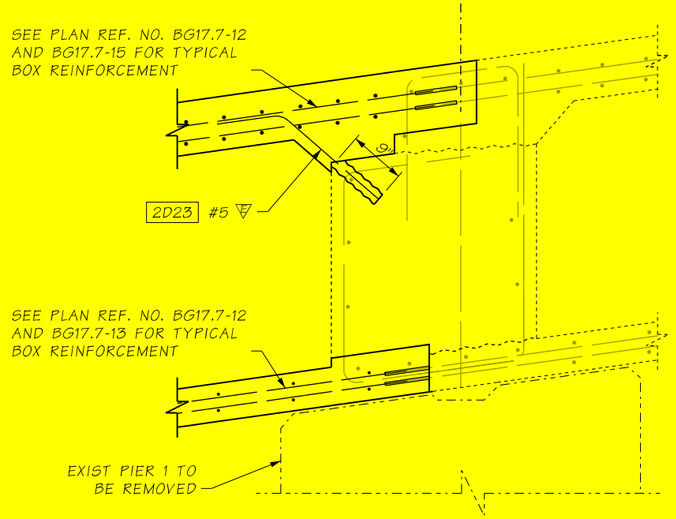
No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

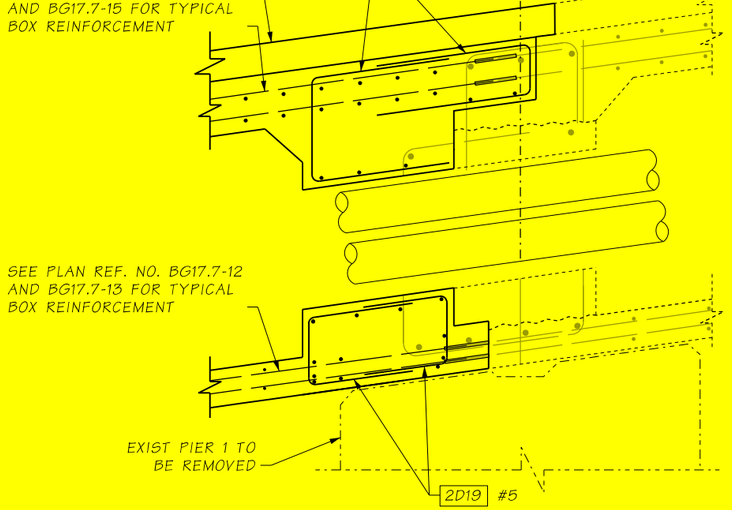
Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date



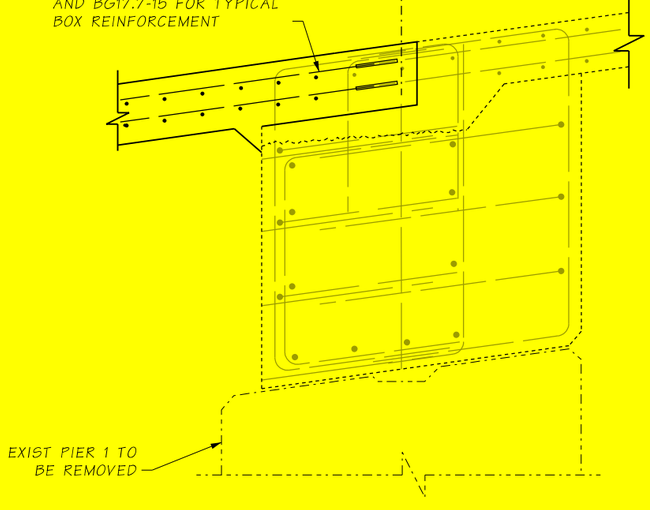
SECTION C 18

INTERIOR CELL



SECTION D 18

UTILITY CONDUIT OPENING



SECTION E 18

OVERHANGS

I-405 FILE NO. 9242 SHEET

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_19_DE_BG_BR17.7-GirdDet8.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/14/2021								
Time:	12:10:19 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN STATE OF WASHINGTON 49664 STRUCTURAL ENGINEER PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

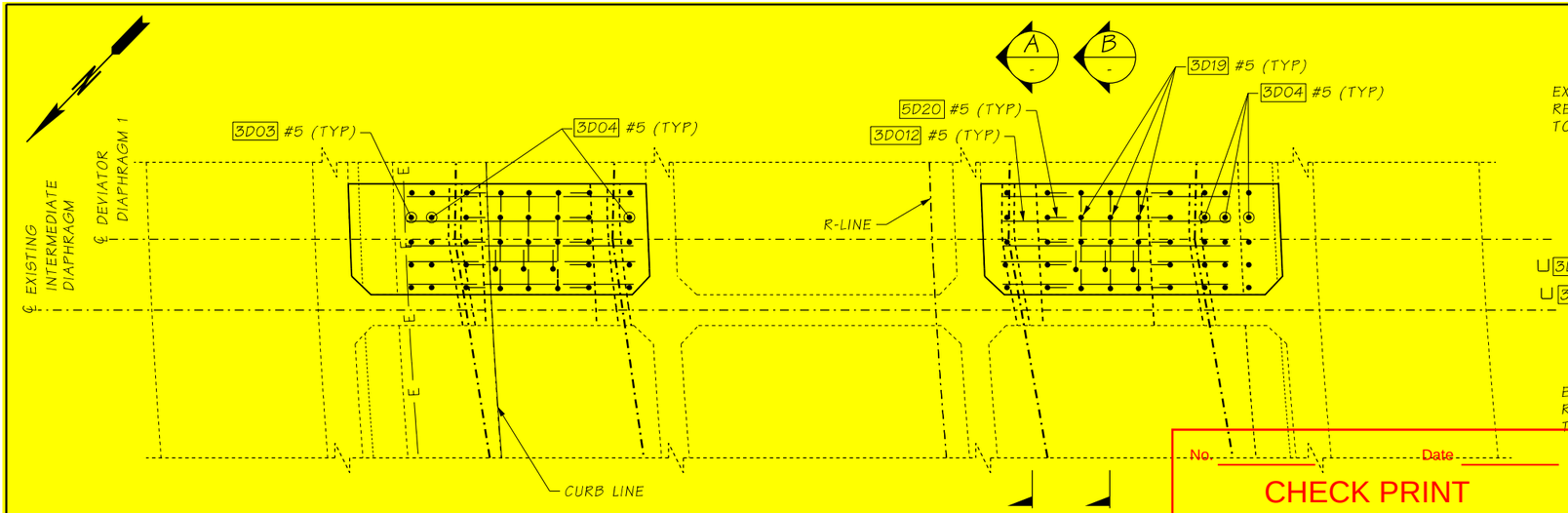
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

CONCRETE BOX DETAILS 8 OF 13

PLAN REF. NO. BG17.7-19

SHEET OF SHEETS



PLAN - DEVIATOR DIAPHRAGM 1

NOTE: EXISTING REINFORCEMENT NOT SHOWN

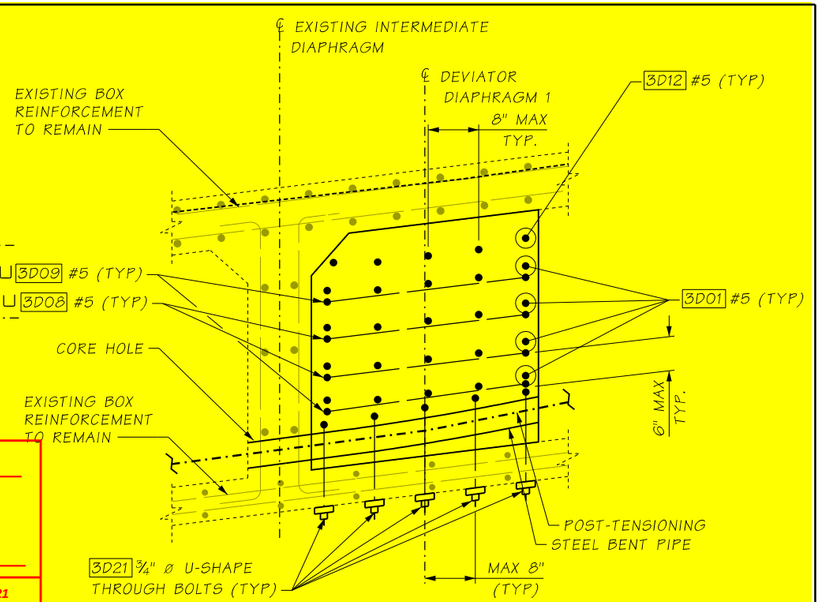
No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

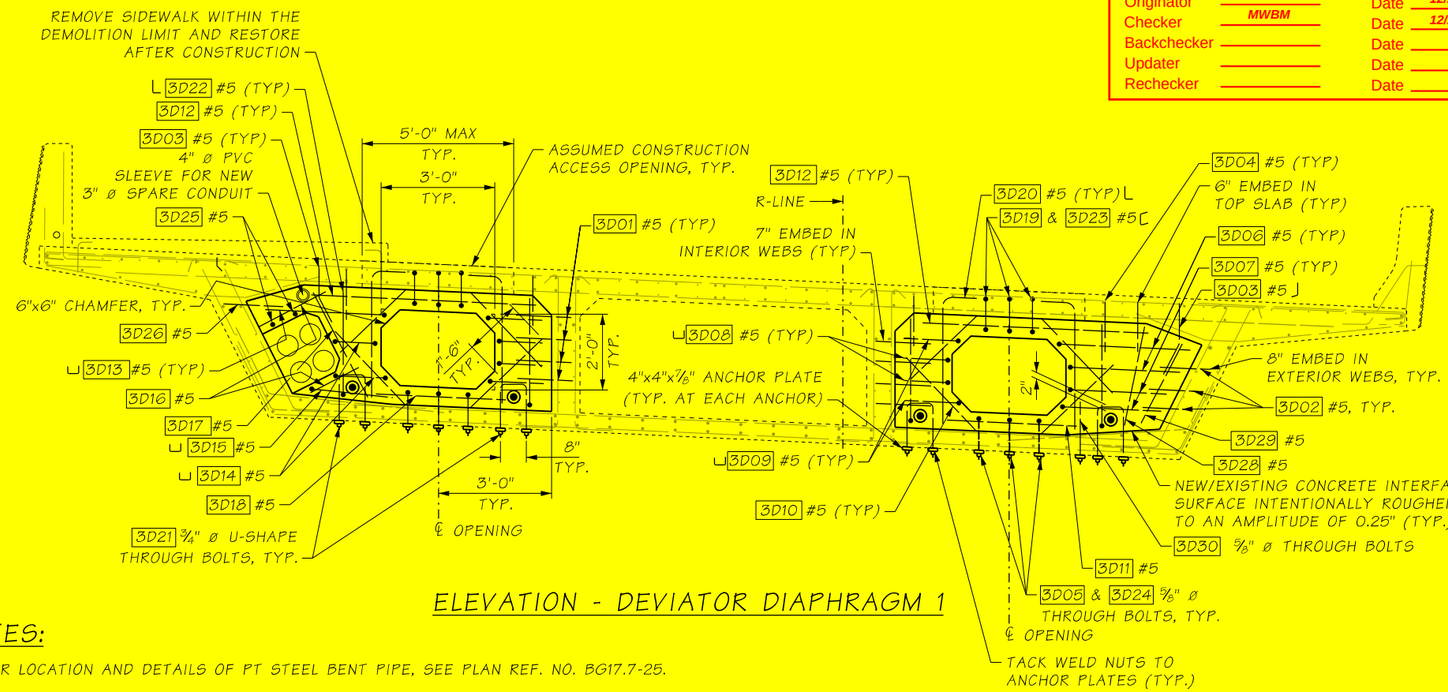
Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

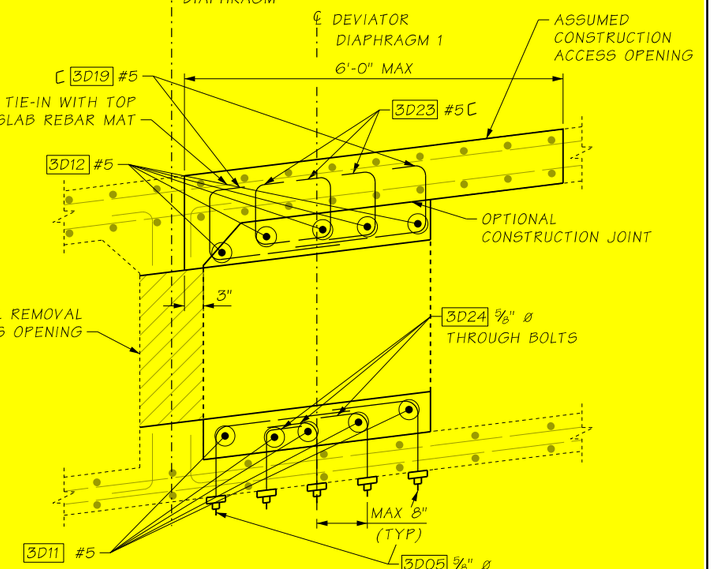


SECTION A

TYPICAL AT PT BENT PIPE



ELEVATION - DEVIATOR DIAPHRAGM 1



SECTION B

TYPICAL AT ACCESS OPENINGS

NOTES:

1. FOR LOCATION AND DETAILS OF PT STEEL BENT PIPE, SEE PLAN REF. NO. BG17.7-25.
2. FOR DETAILS OF CONSTRUCTION ACCESS OPENINGS, SEE PLAN REF. NO. BG17.7-15.
3. U-SHAPE THROUGH-BOLTS SHALL BE ASTM F1554 GRADE 105 AND STRAIGHT THROUGH-BOLTS SHALL BE ASTM A307 GRADE A.
4. DRILL ¾" ø HOLE FOR ⅝" DIA BOLTS AND #5 BARS AND DRILL 1" ø HOLE FOR ¾" ø BOLTS. SET WITH EPOXY RESIN (TYP).

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_20_DE_BG_BR17.7-GirdDet9.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	1:05:49 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN STATE OF WASHINGTON 49664 STRUCTURAL ENGINEER PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE wood. COWI

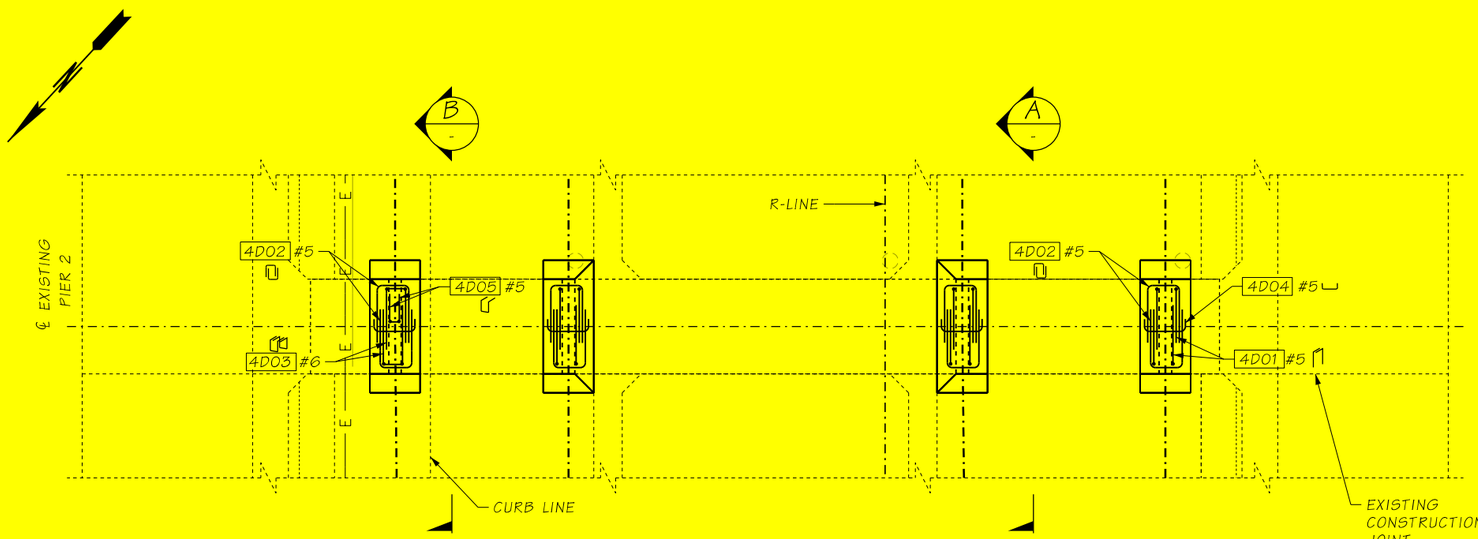
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

CONCRETE BOX DETAILS 9 OF 13

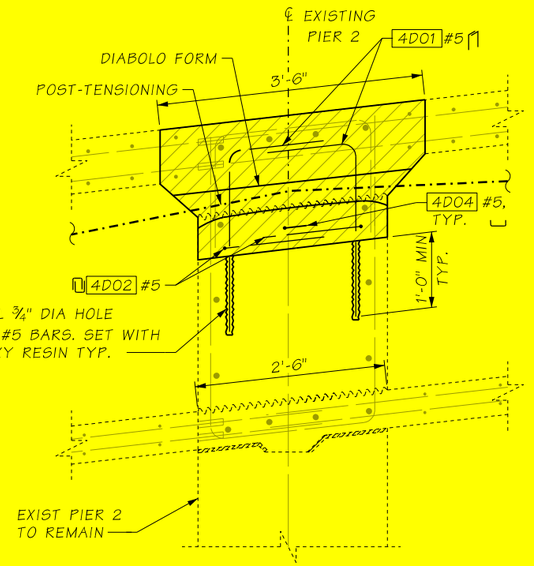
PLAN REF. NO. BG17.7-20

SHEET OF SHEETS



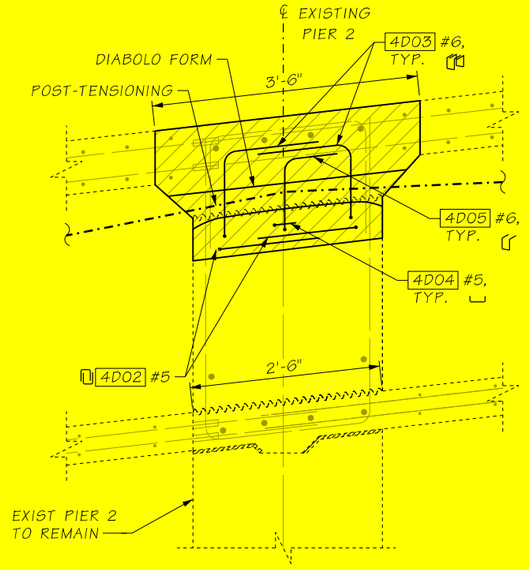
PLAN - EXISTING PIER 2 DIAPHRAGM

NOTE: EXISTING REINFORCEMENT NOT SHOWN



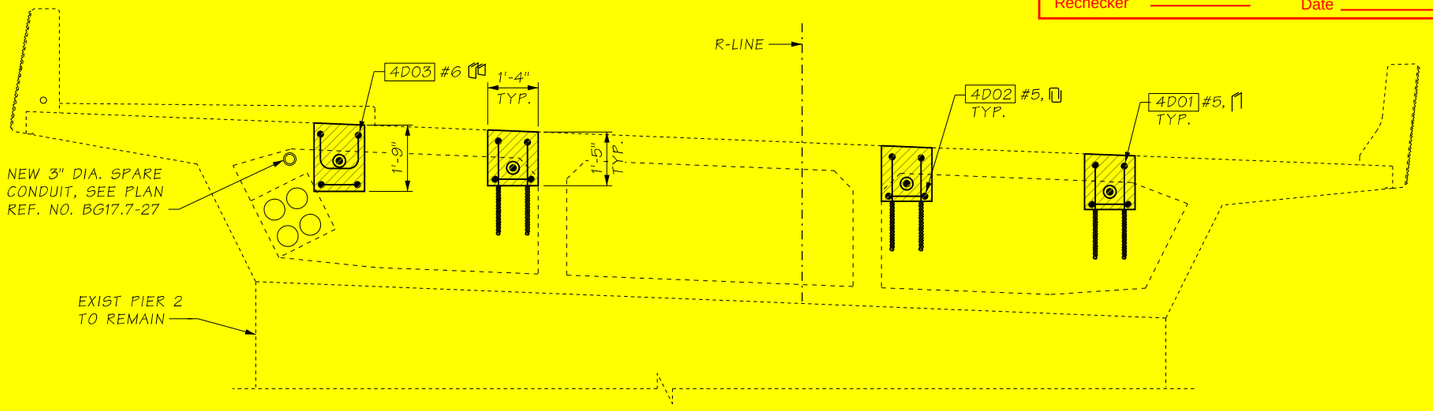
SECTION A

TYPICAL AT PT-2 THROUGH PT-4



SECTION B

AT PT-1 ONLY



ELEVATION - EXISTING PIER 2 DIAPHRAGM

NOTE: EXISTING REINFORCEMENT NOT SHOWN

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	

NOTES:

1. FOR LOCATION AND DETAILS OF PT DIABOLO FORM, SEE PLAN REF. NO. BG17.7-25.
2. ALL EXISTING REINFORCEMENT IN THE PIER DIAPHRAGM SHALL REMAIN OR BE RESTORED AFTER CONSTRUCTION.

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_21_DE_BG_BR17.7-GirdDet10.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	1:36:36 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49064 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

CONCRETE BOX DETAILS 10 OF 13

PLAN REF. NO. BG17.7-21

SHEET OF SHEETS

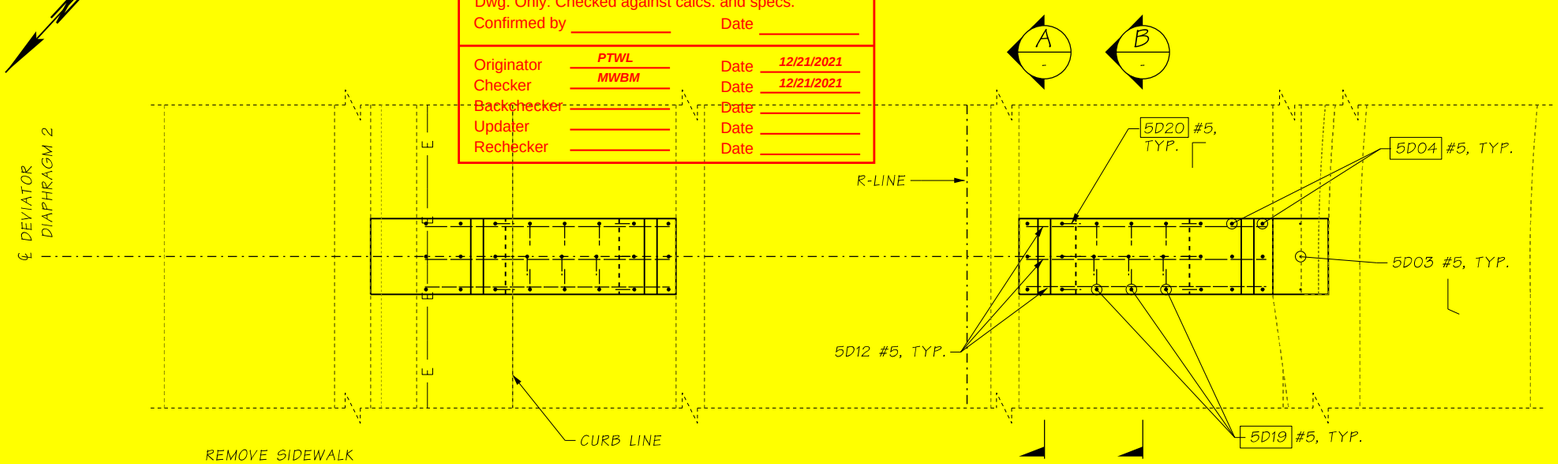
No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

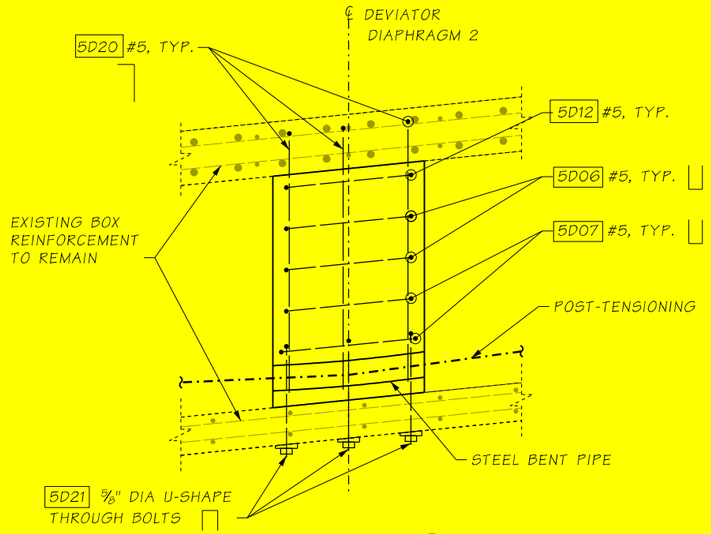
Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	



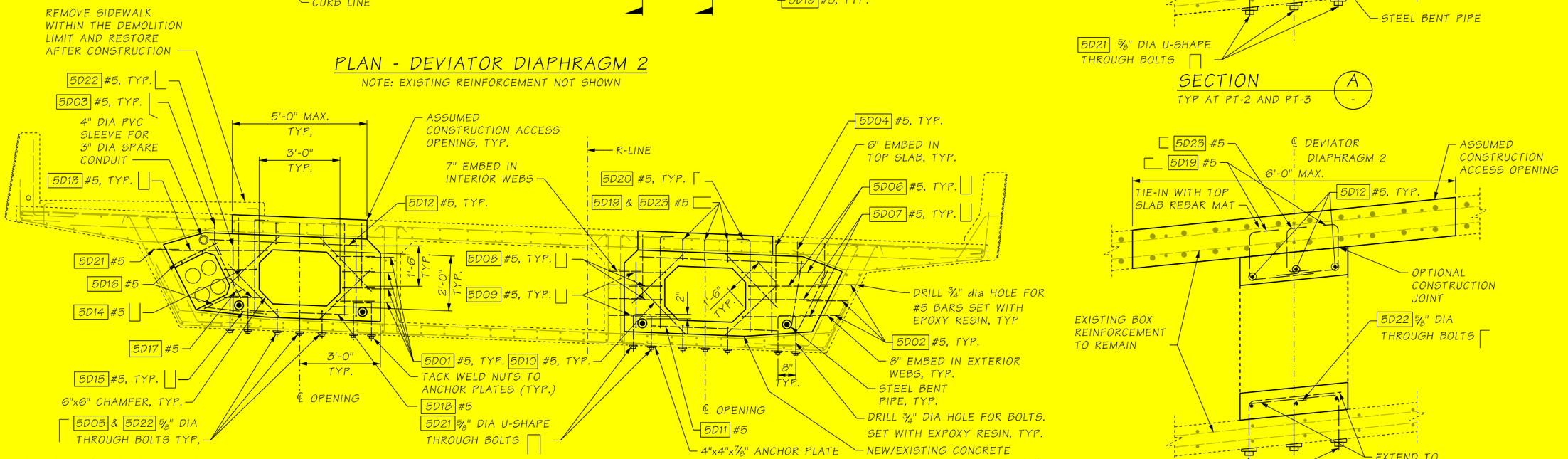
PLAN - DEVIATOR DIAPHRAGM 2

NOTE: EXISTING REINFORCEMENT NOT SHOWN

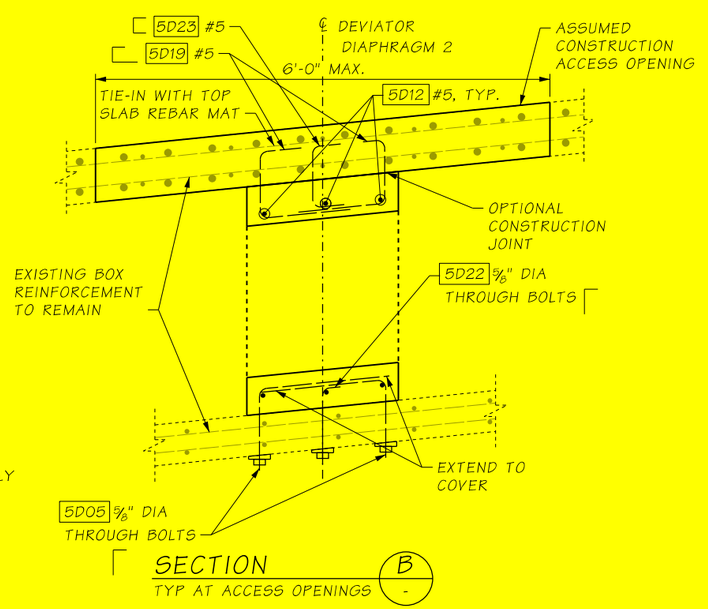


SECTION A

TYP AT PT-2 AND PT-3



ELEVATION - DEVIATOR DIAPHRAGM 2



SECTION B

TYP AT ACCESS OPENINGS

NOTES:

1. FOR LOCATION AND DETAILS OF PT STEEL BENT PIPE, SEE PLAN REF. NO. BG17.7-25.
2. FOR DETAILS OF CONSTRUCTION ACCESS OPENINGS, SEE PLAN REF. NO. BG17.7-15.
3. U-SHAPE THROUGH-BOLTS SHALL BE ASTM F1554 GRADE 105 AND STRAIGHT THROUGH-BOLTS SHALL BE ASTM A307 GRADE A.
4. DRILL ¾" DIA HOLE FOR ⅝" DIA BOLTS AND #5 BARS. SET WITH EPOXY RESIN, TYP.

I-405 FILE NO. 9242 SHEET

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_22_DE_BG_BR17.7-GirdDet11.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD				REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU					10	WASH.			
Checked By:	M. BAUGHMAN					JOB NUMBER XL5467				
Detailed By:	J. GANASSIN									
Current Revision By:						CONTRACT NO. C9242				
Date:	12/20/2021									
Time:	2:03:03 PM	DESCRIPTION	DATE	NO						

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49664 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

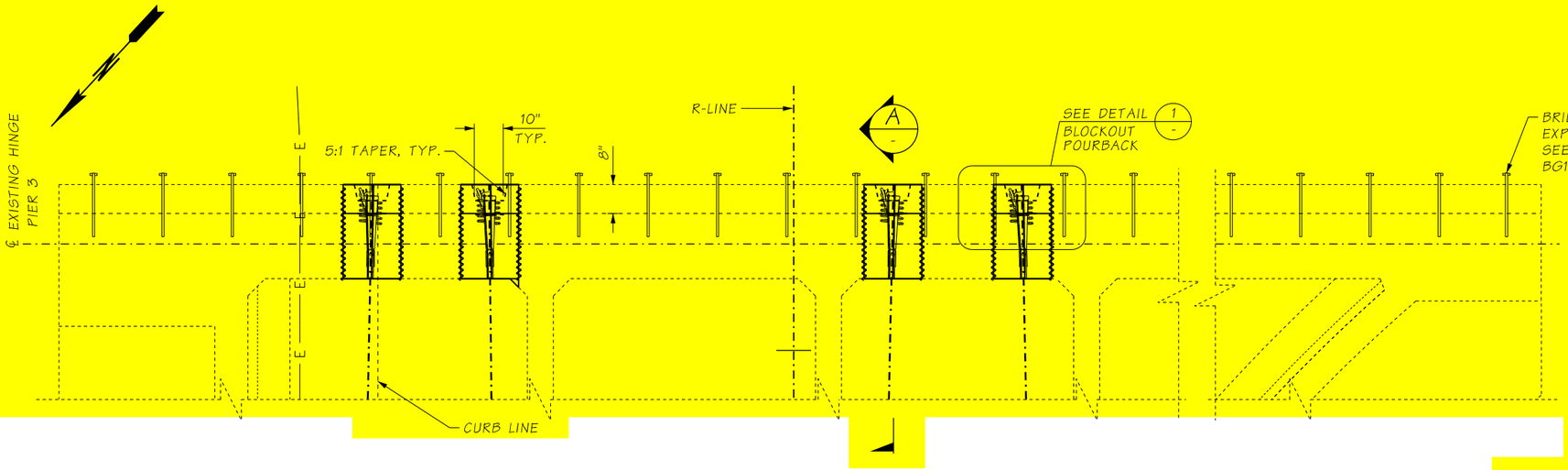
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

CONCRETE BOX DETAILS 11 OF 13

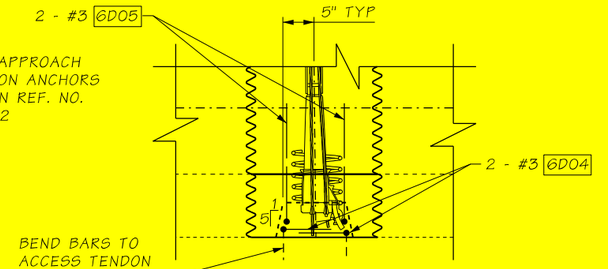
PLAN REF. NO. BG17.7-22

SHEET OF SHEETS



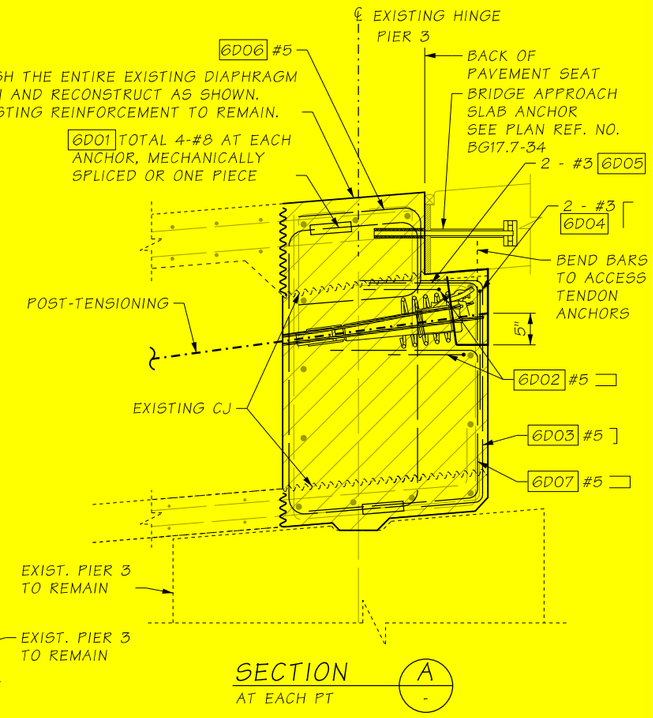
PLAN - EXISTING PIER 3 DIAPHRAGM

NOTE: EXISTING REINFORCEMENT NOT SHOWN



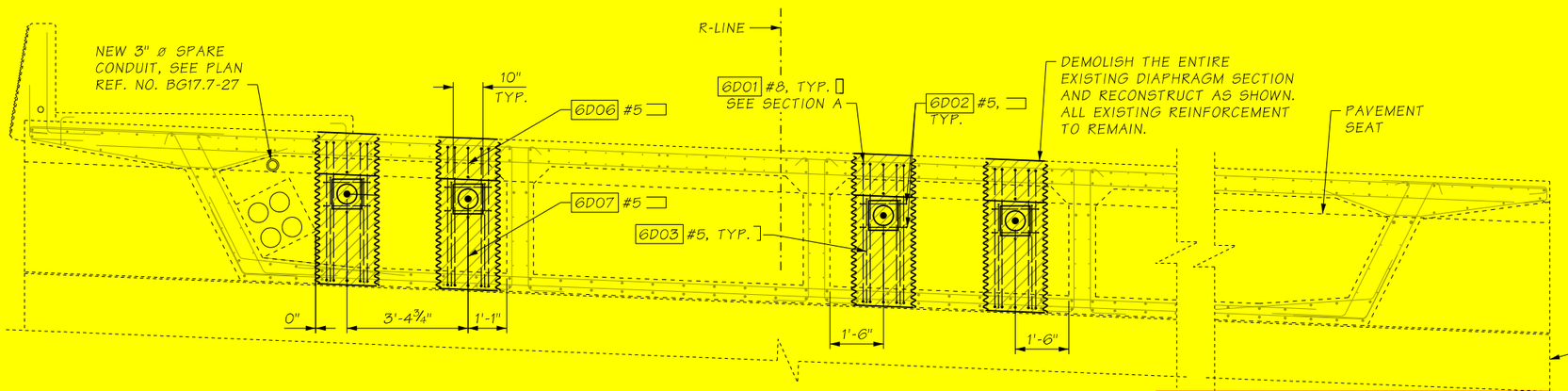
DETAIL 1

PT ANCHORAGE BLOCKOUT PER MANUFACTURER RECOMMENDATIONS



SECTION A

AT EACH PT



ELEVATION - EXISTING PIER 3 DIAPHRAGM

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

NOTES:

1. FOR PT ANCHORAGE LOCATIONS, SEE PLAN BG17.7-25.
2. ALL EXISTING REINFORCEMENT IN THE PIER DIAPHRAGM SHALL REMAIN OR BE RESTORED AFTER CONSTRUCTION.

FILE NO. 9242 SHEET I-405

c:\users\mkol\documents\projectwise\workingdir\wsdot\dms22941\XL5467_23_DE_BG_BR17.7-GirdDet12.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	2:30:03 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 21604 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

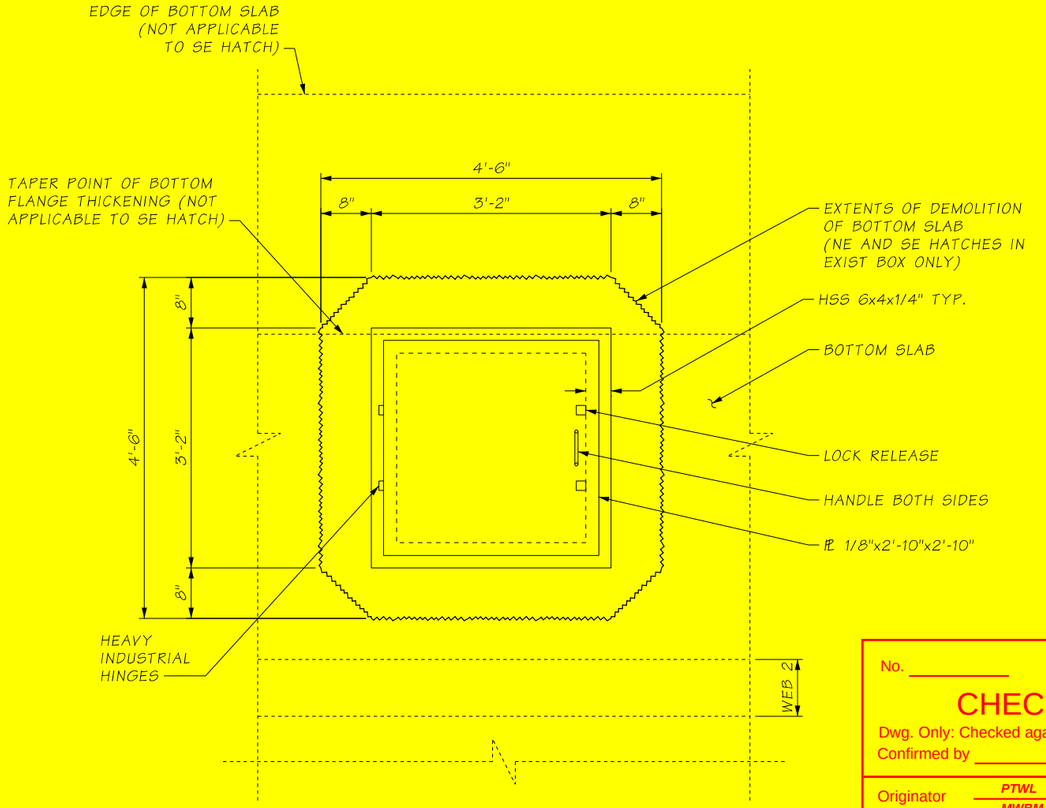
CONCRETE BOX DETAILS 12 OF 13

PLAN REF. NO. BG17.7-23

SHEET

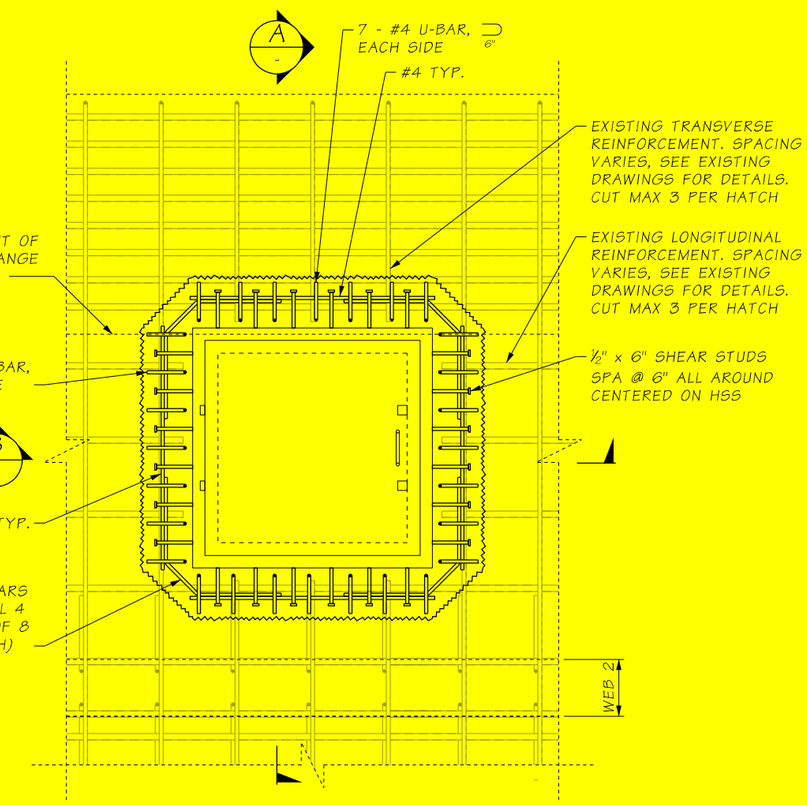
OF

SHEETS



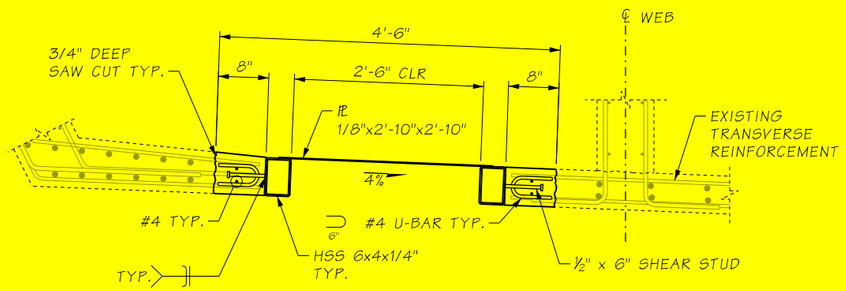
PLAN - GEOMETRY

NE HATCH SHOWN, OTHERS SIMILAR



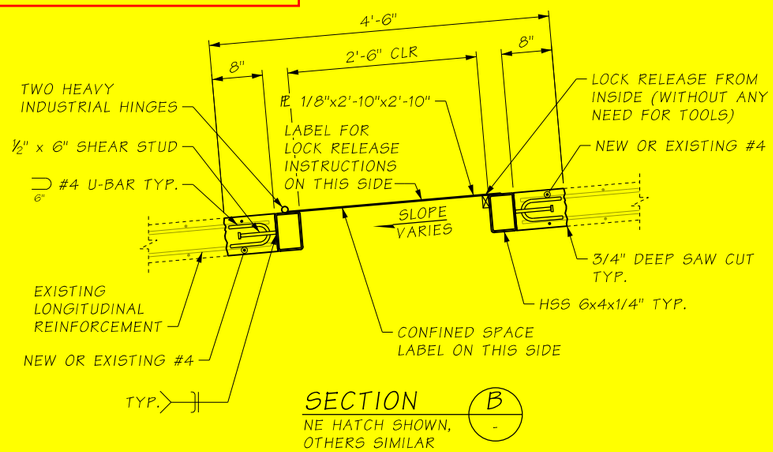
PLAN - REINFORCEMENT

NE HATCH SHOWN, OTHERS SIMILAR



SECTION A

NE HATCH SHOWN, OTHERS SIMILAR



SECTION B

NE HATCH SHOWN, OTHERS SIMILAR

NOTES:

1. CONTRACTOR SHALL AVOID DAMAGE TO EXISTING STEEL REINFORCEMENT TO BE SALVAGED DURING PARTIAL DEMOLITION. REINFORCEMENT NOTED TO BE CUT SHALL BE TRIMMED 1" CLEAR OF HSS FRAME.
2. EXISTING GEOMETRY AND REINFORCING IS SHOWN BASED ON THE RECORD DRAWINGS IN APPENDIX N2 OF THE CONFORMED RFP. CONTRACTOR TO FIELD VERIFY.
3. CONTRACTOR SHALL SUBMIT TYPE 2 WORKING DRAWINGS OF ACCESS HATCH, INCLUDING MATERIAL SPECIFICATIONS TO ENGINEER FOR APPROVAL. ALL MATERIALS SHALL BE GALVANIZED STEEL, UNO. WORKING DRAWINGS SHALL INCLUDE INSTALLATION PLAN FOR HATCHES IN EXISTING BOX.

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

FILE NO. 9242 SHEET _____

I-405

c:\users\mkol\documents\projectwise\workingdir\wsdot\dms22941\XL5467_24_DE_BG_BR17.7-GirdDet13.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/6/2021								
Time:	4:11:54 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 21964 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

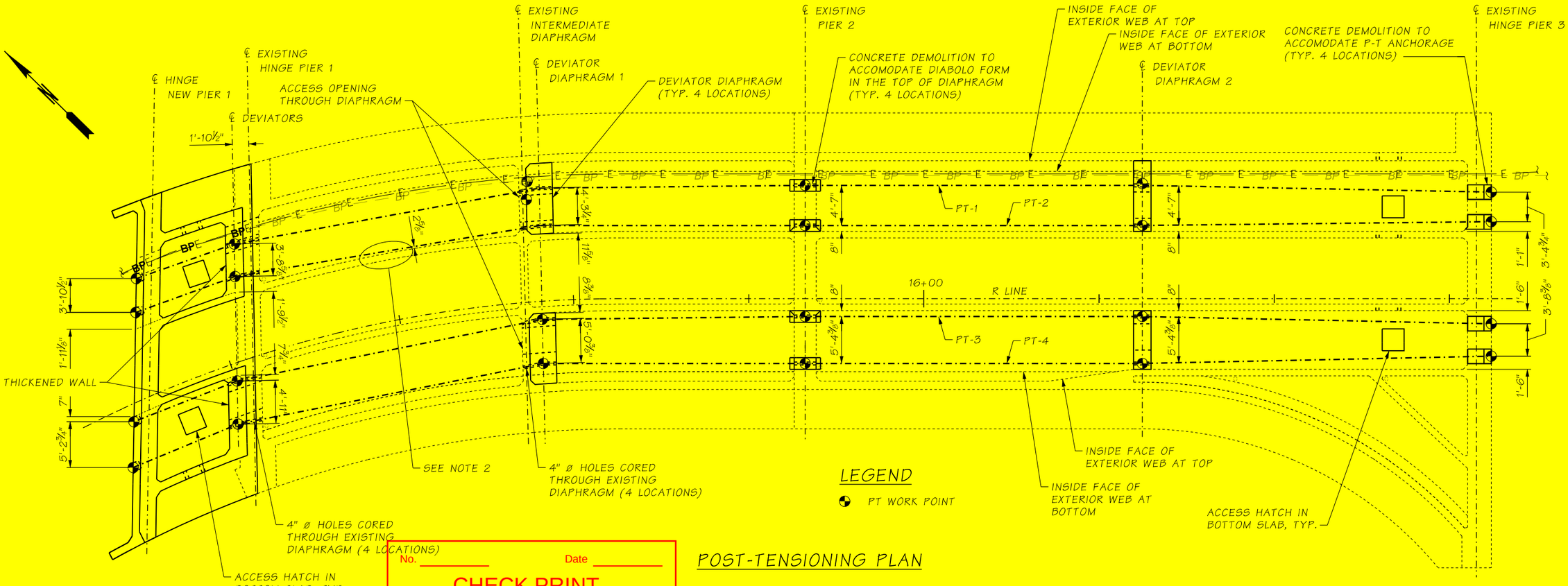
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

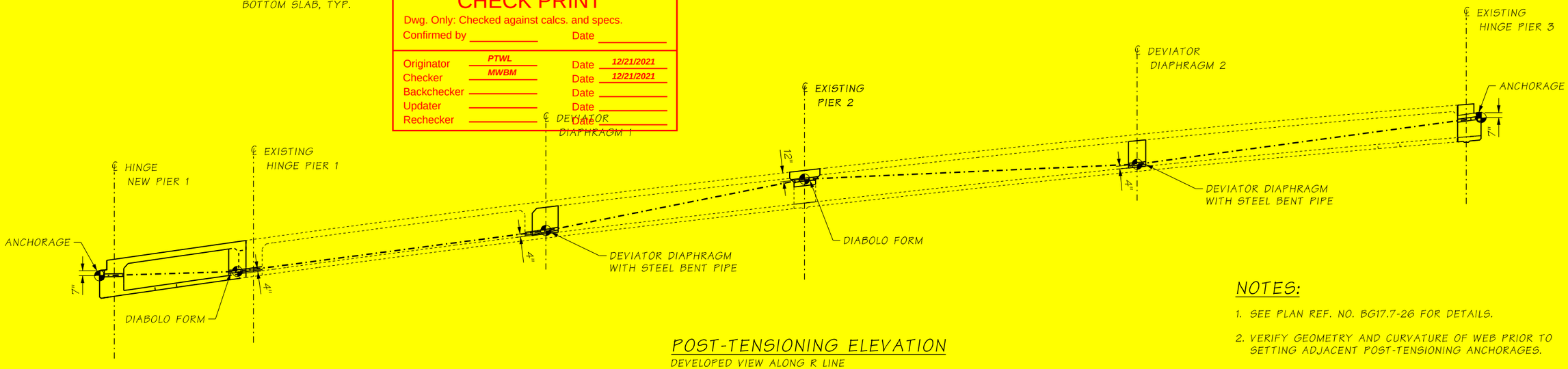
CONCRETE BOX DETAILS 13 OF 13

PLAN REF. NO. BG17.7-24

SHEET OF SHEETS



POST-TENSIONING PLAN



POST-TENSIONING ELEVATION

DEVELOPED VIEW ALONG R LINE

NOTES:

1. SEE PLAN REF. NO. BG17.7-26 FOR DETAILS.
2. VERIFY GEOMETRY AND CURVATURE OF WEB PRIOR TO SETTING ADJACENT POST-TENSIONING ANCHORAGES.

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

FILE NO. 9242 SHEET _____

I-405

c:\users\jagn\documents\projectwise\workingdir\wsdot\dms22941\XL5467_25_DE_BG_BR17.7-PTLayout.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/15/2021								
Time:	4:30:16 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 39864 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

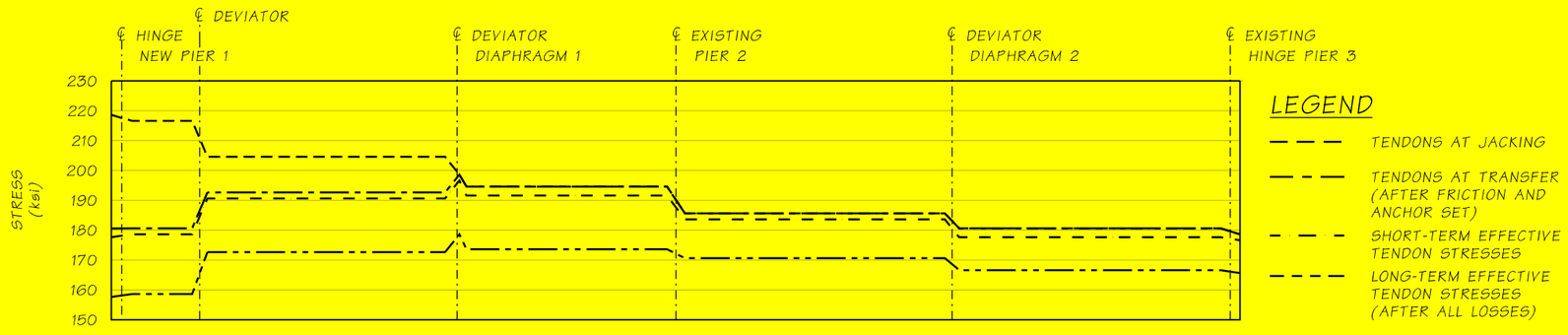
POST-TENSIONING LAYOUT

PLAN REF. NO. BG17.7-25

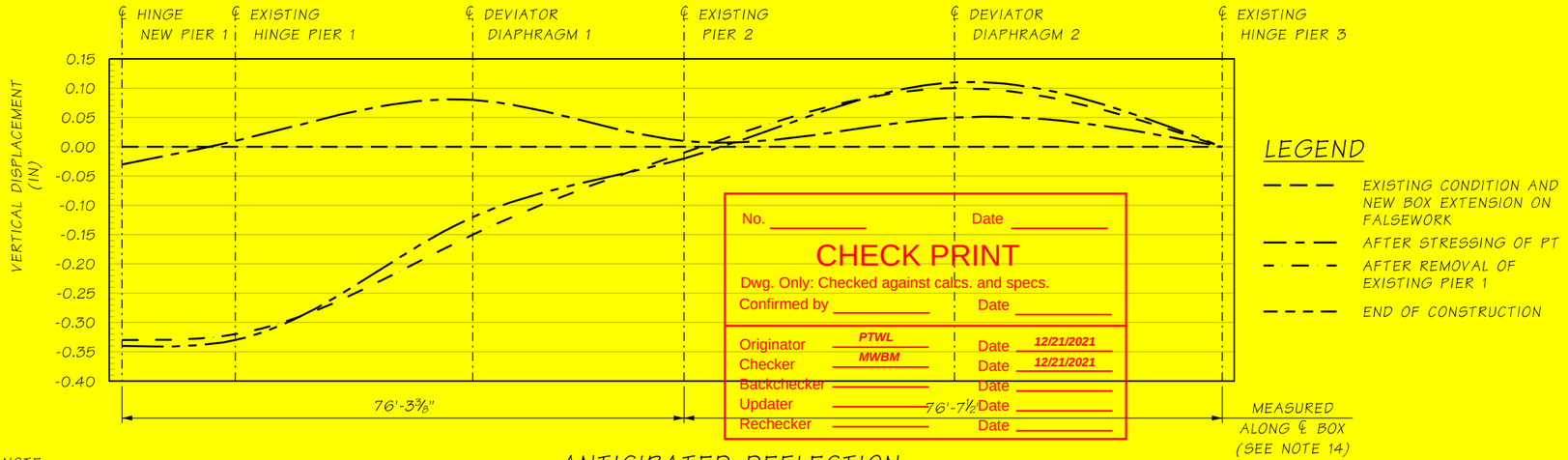
SHEET _____ OF _____ SHEETS

TENDON INFORMATION TABLE

TENDON DESIGNATION	NUMBER OF STRANDS	TENDON LENGTH (ft)	TENDON WEIGHT (lbs)	STRESSING FORCE/TENDON (kips)	STRESSING END	LIVE END FORCE AFTER ANCHOR SET (kips)	DEAD END FORCE AFTER ANCHOR SET (kips)	ELONGATION BEFORE ANCHOR SET (in)	ELONGATION AFTER ANCHOR SET (in)	STRESSING SEQUENCE
PT-1	7	157.2	814	332	PIER 1	274	180	10.2	8.5	3
PT-2	7	157.2	814	332	PIER 1	272	180	10.2	8.5	1
PT-3	7	157.8	818	332	PIER 1	273	179	10.2	8.5	2
PT-4	7	158.0	819	332	PIER 1	272	178	10.2	8.5	4



AVERAGE STRESS IN POST-TENSIONING TENDONS



No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

ANTICIPATED DEFLECTION

NOTE:
ANTICIPATED DEFLECTION DIAGRAM INCLUDES ANTICIPATED SETTLEMENT OF PIER 1 FOOTING DUE TO LOADING FROM BRIDGE AND RETAINING WALL 03.63L BACKFILL.

NOTES:

1. POST-TENSIONING SHALL BE IN ACCORDANCE WITH SECTION 6-02.3(26) OF THE WSDOT STANDARD SPECIFICATIONS, UNLESS NOTED OTHERWISE.
2. POST-TENSIONING LAYOUT IS AS SHOWN ON PLAN REF. NO. BG17.7-25.
3. THE MINIMUM COMPRESSIVE STRENGTH OF THE CAST-IN-PLACE CONCRETE AT THE TIME OF POST-TENSIONING SHALL BE 5.0ksi.
4. THE MAXIMUM OUTSIDE DIAMETER OF THE DUCT SHALL BE 2.875 INCHES. THE AREA OF THE DUCT SHALL BE AT LEAST 2.5 TIMES THE NET AREA OF THE POST-TENSIONING STEEL IN THE DUCT.
5. THE DESIGN IS BASED ON 0.6" DIA LOW RELAXATION STRANDS WITH AN ANCHOR SET OF ⅜". A CURVATURE FRICTION COEFFICIENT, μ = 0.20 AND A WOBBLE FRICTION COEFFICIENT, k = 0.0002/FT. THE ACTUAL ANCHOR SET AND JACKING FORCE USED BY THE CONTRACTOR SHALL BE SPECIFIED IN THE SHOP PLANS AND INCLUDED IN THE TRANSFER FORCE CALCULATIONS.
6. THE DESIGN IS BASED ON THE ESTIMATED PRESTRESS LOSS OF POST-TENSIONING STRANDS SHOWN IN THE POST-TENSIONING TABLE DUE TO STEEL RELAXATION, AND ELASTIC SHORTENING, CREEP AND SHRINKAGE OF CONCRETE.
7. THE CONTRACTOR SHALL SUBMIT THE STRESSING SEQUENCE AND ELONGATION CALCULATIONS TO THE ENGINEER FOR APPROVAL. ALL LOSSES DUE TO TENDON VERTICAL AND HORIZONTAL CURVATURE MUST BE INCLUDED IN ELONGATION CALCULATIONS. THE STRESSING SEQUENCE SHALL BE AS SHOWN IN THE TENDON INFORMATION TABLE.
8. ALL TENDONS SHALL BE STRESSED FROM ONE END, AS SHOWN IN TENDON INFORMATION TABLE.
9. PROVIDE SPIRAL REINFORCEMENT AROUND ANCHORAGE HARDWARE AS PER SUPPLIER'S REQUIREMENTS.
10. STEEL BENT PIPES SHALL BE RIGID GALVANIZED STEEL PIPE CONFORMING TO THE REQUIREMENTS OF ASTM A53, TYPE E, GRADE B. THE PIPE SHALL BE SCHEDULE 40 WITH ID OF 2.47 IN. THE PIPE SHALL BE BENT SO AS TO ACCURATELY CONFORM TO THE ALIGNMENT OF THE TENDON TAKING INTO CONSIDERATION THE MINIMUM BENDING RADIUS OF 6 FT.
11. WHERE DIABOLOS ARE SPECIFIED IN PLANS, CONTRACTOR MAY USE STEEL BENT PIPES OR DIABOLOS. DIABOLO FORMS SHALL BE HDPE. WORKING DRAWINGS OF THE PROPOSED SYSTEM SHALL BE SUBMITTED TO THE ENGINEER FOR ACCEPTANCE AND APPROVAL, INCLUDING DEMONSTRATION OF PRIOR SUCCESSFUL USE IN SIMILAR BRIDGES.
12. EFFECTIVE STRESS AFTER ALL LOSSES VARIES ALONG THE TENDON LENGTH. SEE PROVIDED CHART FOR THEORETICAL STRESSES.
13. TENDON ELONGATIONS PROVIDED INCLUDE ESTIMATED ELASTIC SHORTENING OF THE BOX GIRDER AT JACKING AND AFTER ANCHOR SET.
14. TENDON LENGTHS ARE MEASURED BETWEEN OUTER FACE OF ANCHOR PLATES ALONG THE CENTERLINE OF DUCTS. MEASUREMENTS SHOWN ALONG ℄ BOX ARE PROVIDED FOR REFERENCE ONLY.
15. SEE PLAN REF NO BG17.7-03 FOR CONSTRUCTION SEQUENCE.

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_26_DE_BG_BR17.7-PTDetails.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	B. HU				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/16/2021								
Time:	3:08:24 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN STATE OF WASHINGTON 49064 PROFESSIONAL ENGINEER

E.O.R. 1 STAMP BOX DATE

E.O.R. 2 STAMP BOX DATE

Washington State Department of Transportation

FLATIRON LANE wood. COWI

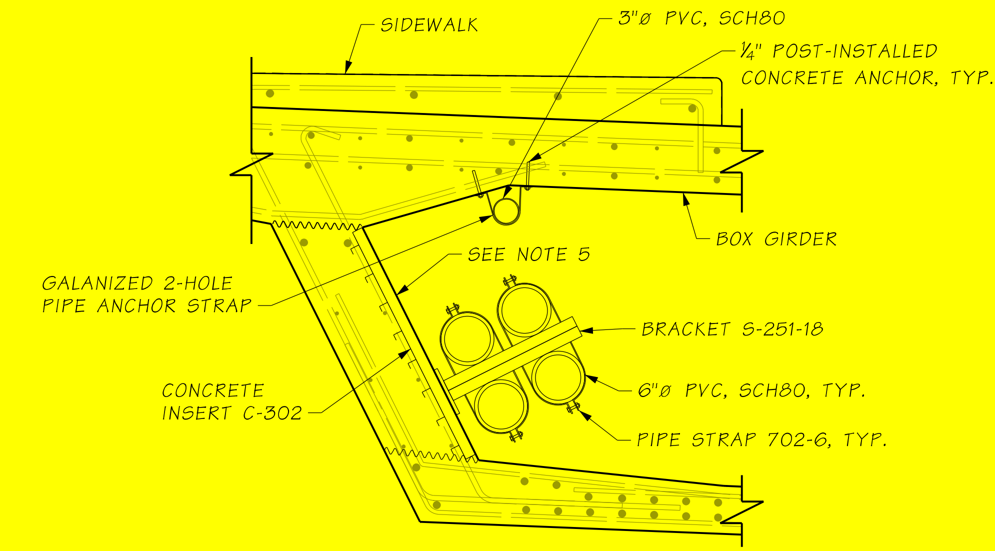
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

POST-TENSIONING DETAILS

PLAN REF. NO. BG17.7-26

SHEET OF SHEETS

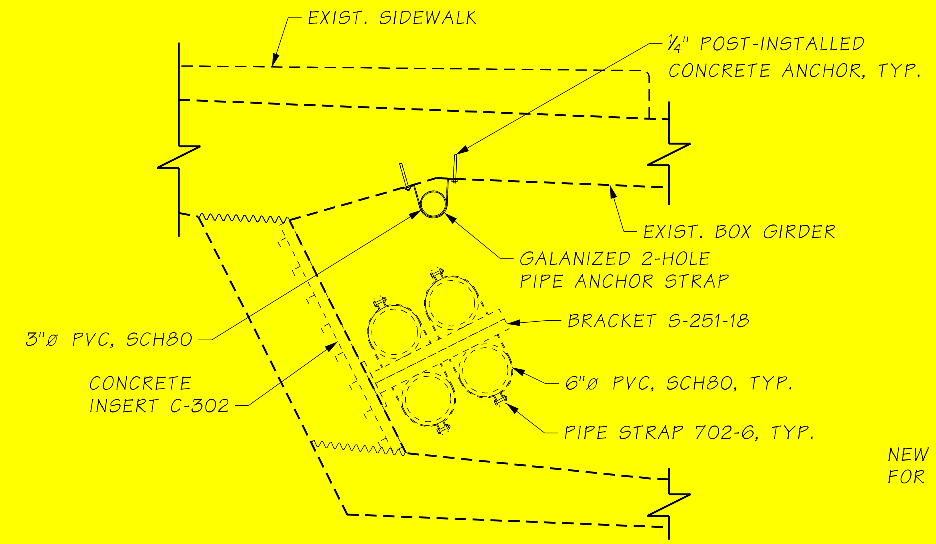


NOTES:

1. POWER CONDUIT SUPPORTS ASSUME USE OF SUPERSTRUT BY THOMAS & BETTS, OR APPROVED EQUAL.
2. ALL MATERIALS USED SHALL BE GALVANIZED.
3. POWER CONDUIT SUPPORTS SHALL BE INSTALLED AT 5'-0" MAXIMUM ON CENTER SPACING THROUGH THE BRIDGE LENGTHENING. BRACKETS SHALL BE 1 FOOT MINIMUM FROM FACE OF DIAPHRAGMS.
4. CONCRETE INSERTS SHALL BE INSTALLED COMPLETE WITH END CAPS AND FOAM FILLER.
5. CONCRETE INSERT SHALL BE INSTALLED FLUSH WITH INTERIOR FACE OF WEB.

CONDUIT SUPPORT

SHOWN IN NEW BOX LENGTHENING



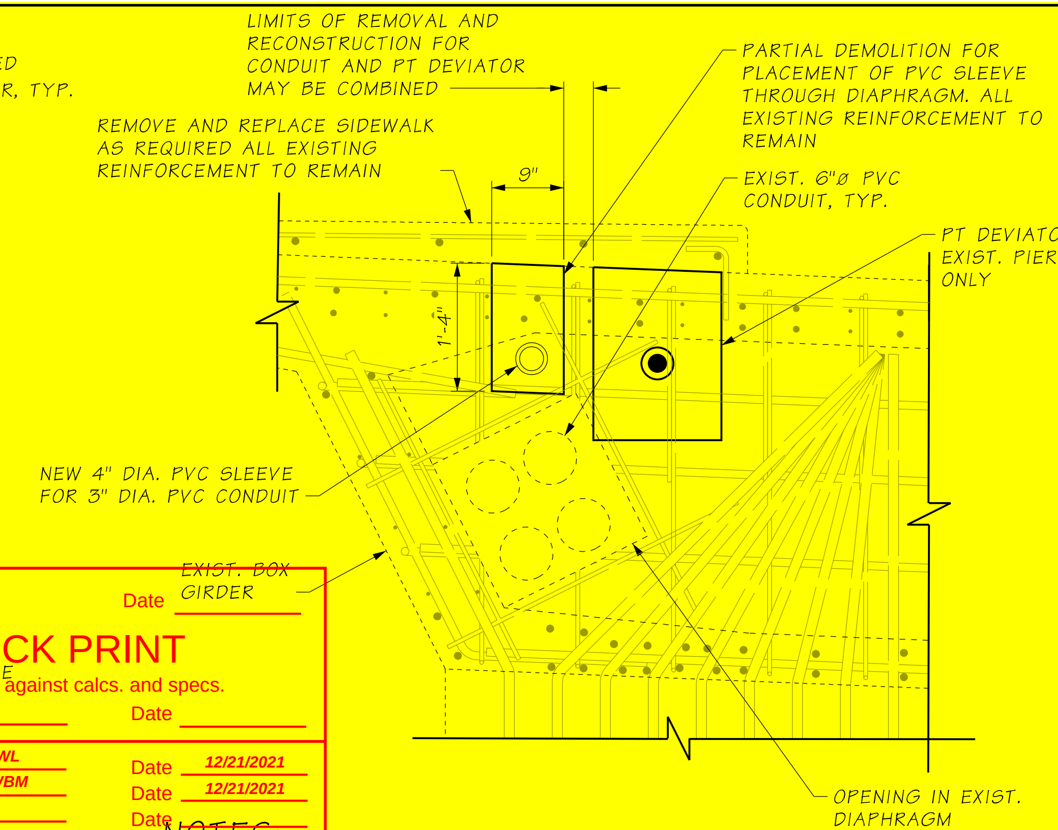
NOTES:

1. ALL EXISTING ELEMENTS SHOWN ARE BASED ON AVAILABLE AS-BUILT PLANS.
2. NEW SPARE CONDUIT SHALL BE HELD IN PLACE WITH GALVANIZED 2-HOLE PIPE ANCHOR STRAPS AT 5'-0" MAXIMUM SPACING. STRAPS SHALL BE ANCHORED TO TOP SLAB OF EXISTING BOX GIRDER USING ¼" POST-INSTALLED CONCRETE ANCHORS.
3. CONTRACTOR SHALL SUBMIT WORKING DRAWING SHOWING SPARE CONDUIT SUPPORT MATERIALS AND INSTALLATION PROCEDURES TO ENGINEER.

CONDUIT SUPPORT

SHOWN IN EXISTING BOX

No. ____ Date ____
CHECK PRINT
Dwg. Only: Checked against calcs. and specs.
Confirmed by ____ Date ____
Originator PTWL Date 12/21/2021
Checker MWBM Date 12/21/2021
Backchecker ____ Date ____
Updater ____ Date ____
Rechecker ____ Date ____

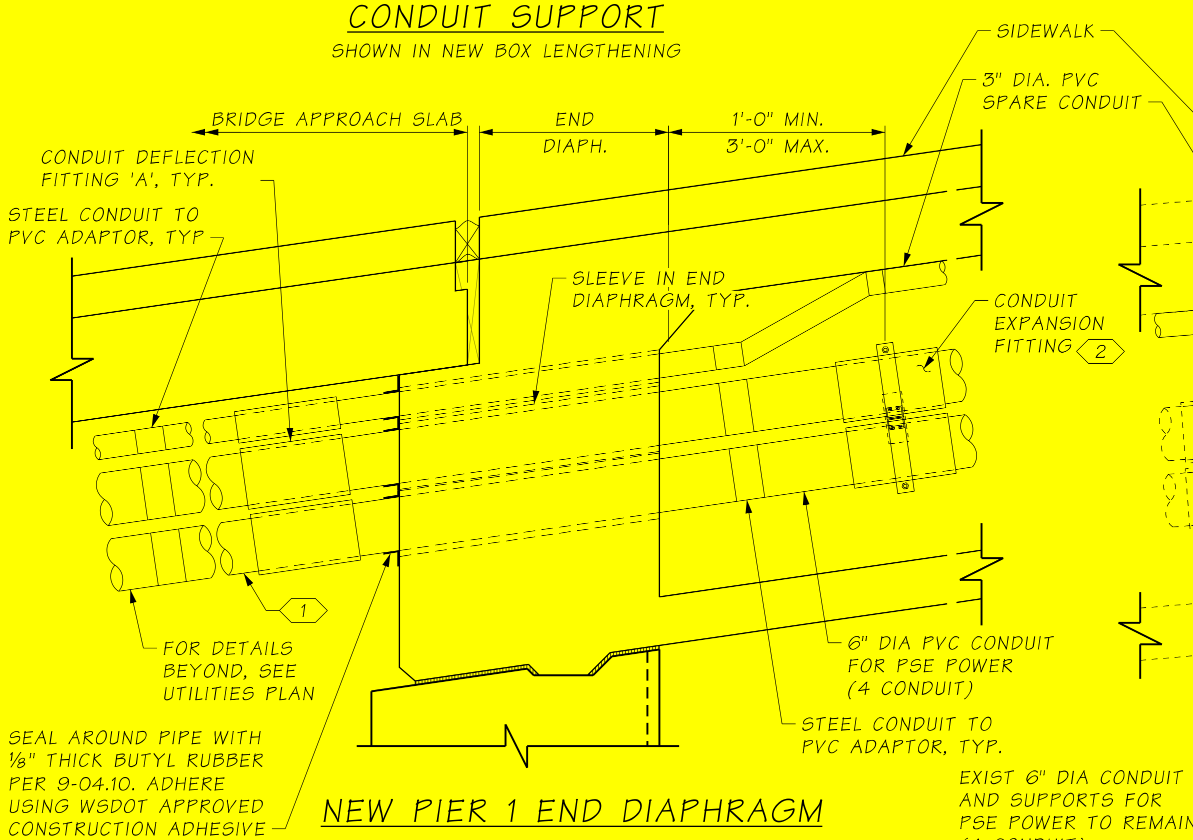


NOTES:

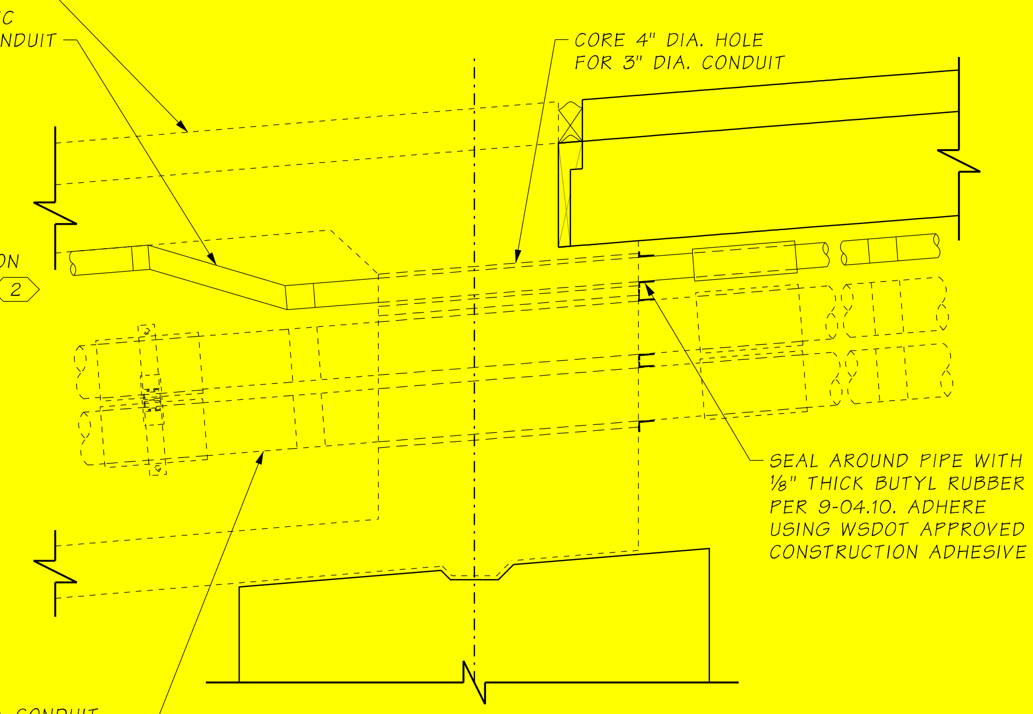
1. CONTRACTOR SHALL SUBMIT WORKING DRAWING SHOWING LIMIT OF DEMOLITION AND RECONSTRUCTION TO ENGINEER.

EXISTING DIAPHRAGM BLOCKOUTS

EXISTING PIER 2 DIAPHRAGM SHOWN, EXISTING PIER 1, INTERMEDIATE, AND PIER 3 DIAPHRAGMS SIMILAR.



NEW PIER 1 END DIAPHRAGM



EXISTING PIER 3 END DIAPHRAGM

FOR TYPICAL DETAILS NOT SHOWN, SEE "NEW PIER 1 END DIAPHRAGM"

GENERAL NOTES:

1. SET POSITION OF EXPANSION FITTING BASED ON MANUFACTURER RECOMMENDATIONS AND TEMPERATURE AT TIME OF INSTALLATION.
2. ONE EXPANSION FITTING SHALL BE INSTALLED NEAR NEW PIER 1 AS SHOWN. EXPANSION FITTINGS SHALL ACCOMMODATE 5.1 INCHES OF MOVEMENT. THE DESIGN TEMPERATURE RANGE IS 125 DEGREES (-15° TO 110°).
3. SEE PLAN REF. NO. BG17.7-31 FOR CONDUIT DEFLECTION FITTING 'A' DETAIL.
4. SEE PLAN REF. NO. BG17.7-16 BG17.7-23 FOR POWER CONDUITS PLACEMENT DETAILS AT END DIAPHRAGMS.
5. CONDUIT SHALL BE TESTED IN ACCORDANCE WITH UTILITY OWNER REQUIREMENTS AND COORDINATED TO ALLOW TESTING TO BE WITNESSED BY OWNER IF REQUIRED.

NOTES:

1. 10'-0" STEEL CONDUIT SECTION BETWEEN CONDUIT DEFLECTION FITTING A AND PVC CONDUIT ADAPTOR
2. RESTRAIN BARREL END OF CONDUIT EXPANSION FITTING

FILE NO. 9242 SHEET ____ I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_27_DE_BG_BR17.7-UtilSupport.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD		
Designed By:	B. HU			
Checked By:	M. BAUGHMAN			
Detailed By:	K. BUNGER			
Current Revision By:				
Date:	12/20/2021			
Time:	11:28:12 AM	DESCRIPTION	DATE	NO

REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
10	WASH.			
JOB NUMBER XL5467				
CONTRACT NO. C9242				

MATTHEW D. BAUGHMAN · STATE OF WASHINGTON · 49664 · STRUCTURAL ENGINEER · PROFESSIONAL ENGINEER

DATE
E.O.R. 1 STAMP BOX

DATE
E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE wood. COWI

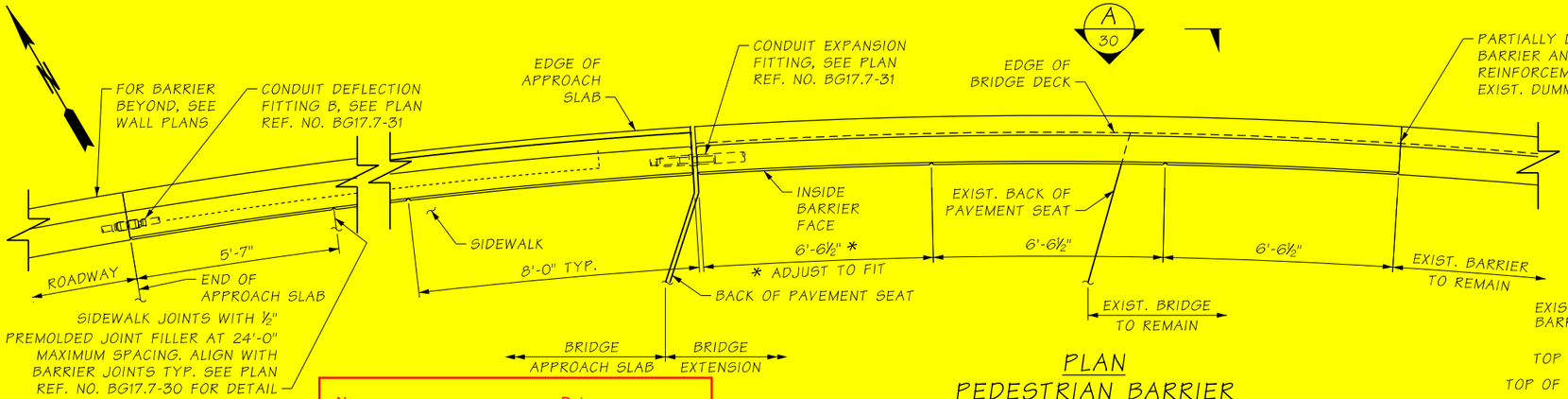
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

UTILITY SUPPORTS

PLAN REF. NO. BG17.7-27

SHEET OF SHEETS

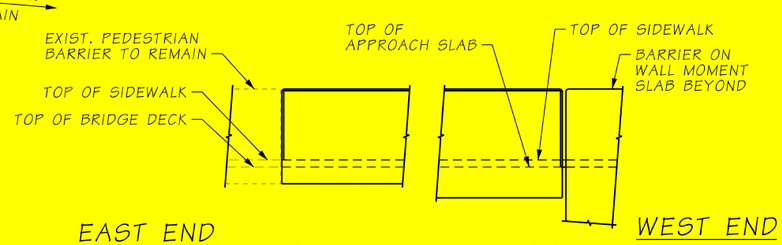


PLAN
PEDESTRIAN BARRIER

BARRIER CONTINUOUS BETWEEN BRIDGE DECK EXPANSION JOINTS.
CONSTRUCTION JOINTS WITH SHEAR KEYS ARE PERMISSIBLE AT DUMMY JOINT LOCATIONS.
FORM JOINTS BETWEEN DUMMY JOINTS SHALL NOT BE PERMITTED.

NOTES:

1. MIN. HEIGHT. PEDESTRIAN BARRIER HEIGHT MAY VARY IF REQUIRED TO PROVIDE A SMOOTH PROFILE.
2. REMAINING REINFORCING SHALL BE CLEANED BEFORE NEW CONCRETE IS PLACED.



OUTSIDE ELEVATION
NORTH PEDESTRIAN BARRIER

SOUTH PEDESTRIAN BARRIER SIMILAR

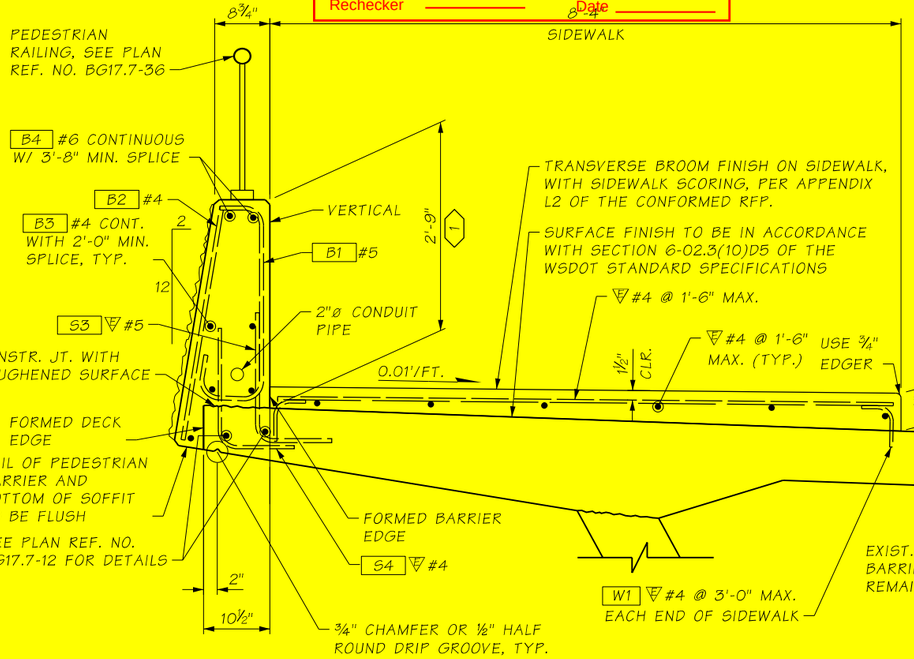
No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

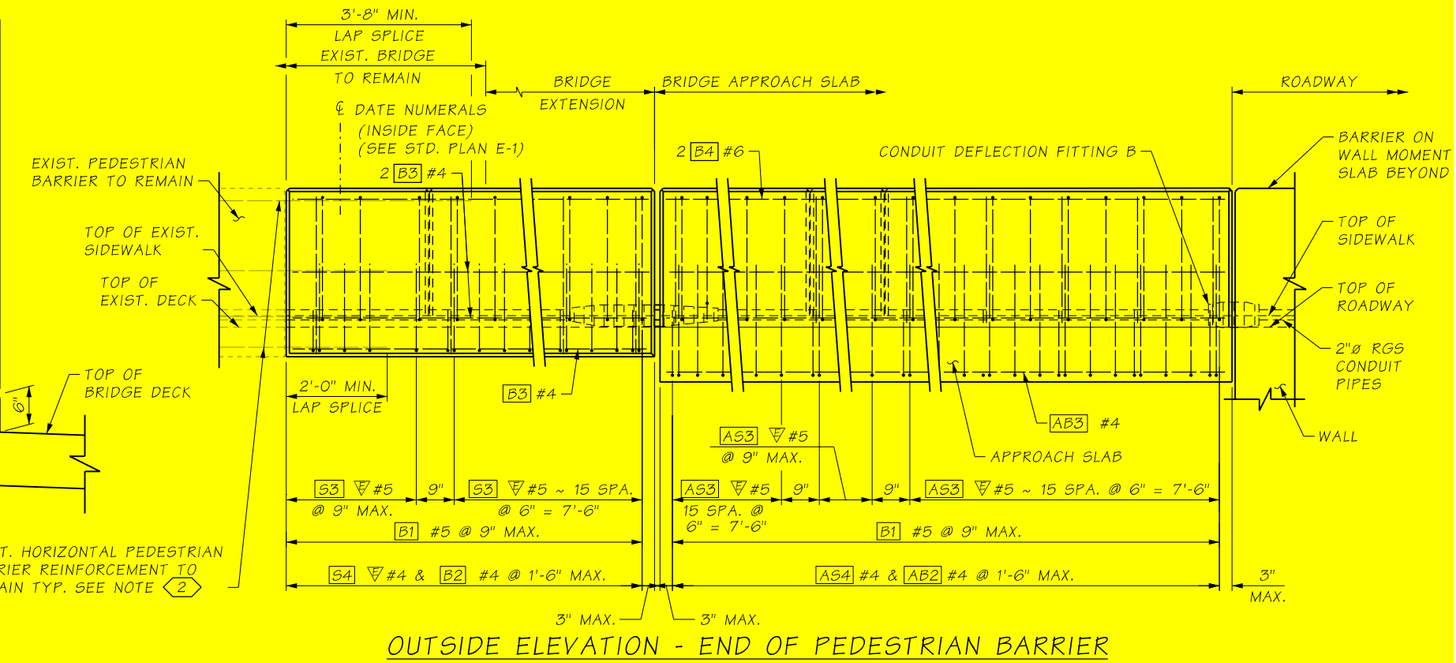
Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date



TYPICAL SECTION - PEDESTRIAN BARRIER

SHOWN ON BRIDGE



OUTSIDE ELEVATION - END OF PEDESTRIAN BARRIER

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_28_DE_BG_BG17.7-Barrier1.dgn											
Design Mgr:	BRIAN BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	F.C. CAJAS				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	M. AASAL				CONTRACT NO. C9242				
Current Revision By:									
Date:	12/16/2021								
Time:	3:13:19 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 20064 — PROFESSIONAL ENGINEER

E.O.R. 1 STAMP BOX — DATE

E.O.R. 2 STAMP BOX — DATE

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

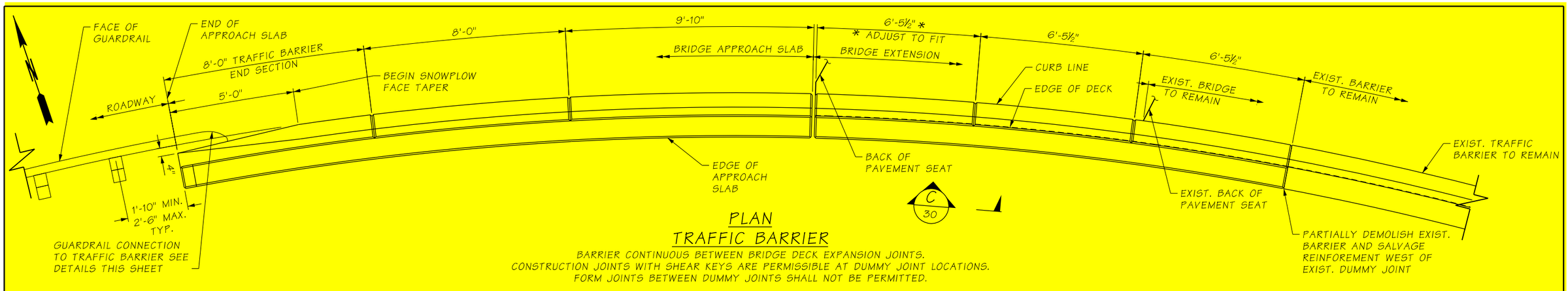
BRIDGE 405/17.7 - RENTON AVE OVER I-405

BARRIER DETAILS 1 OF 4

PLAN REF. NO. BG17.7-28

SHEET OF SHEETS

I-405 FILE NO. 9242 SHEET



PLAN
TRAFFIC BARRIER

BARRIER CONTINUOUS BETWEEN BRIDGE DECK EXPANSION JOINTS.
CONSTRUCTION JOINTS WITH SHEAR KEYS ARE PERMISSIBLE AT DUMMY JOINT LOCATIONS.
FORM JOINTS BETWEEN DUMMY JOINTS SHALL NOT BE PERMITTED.

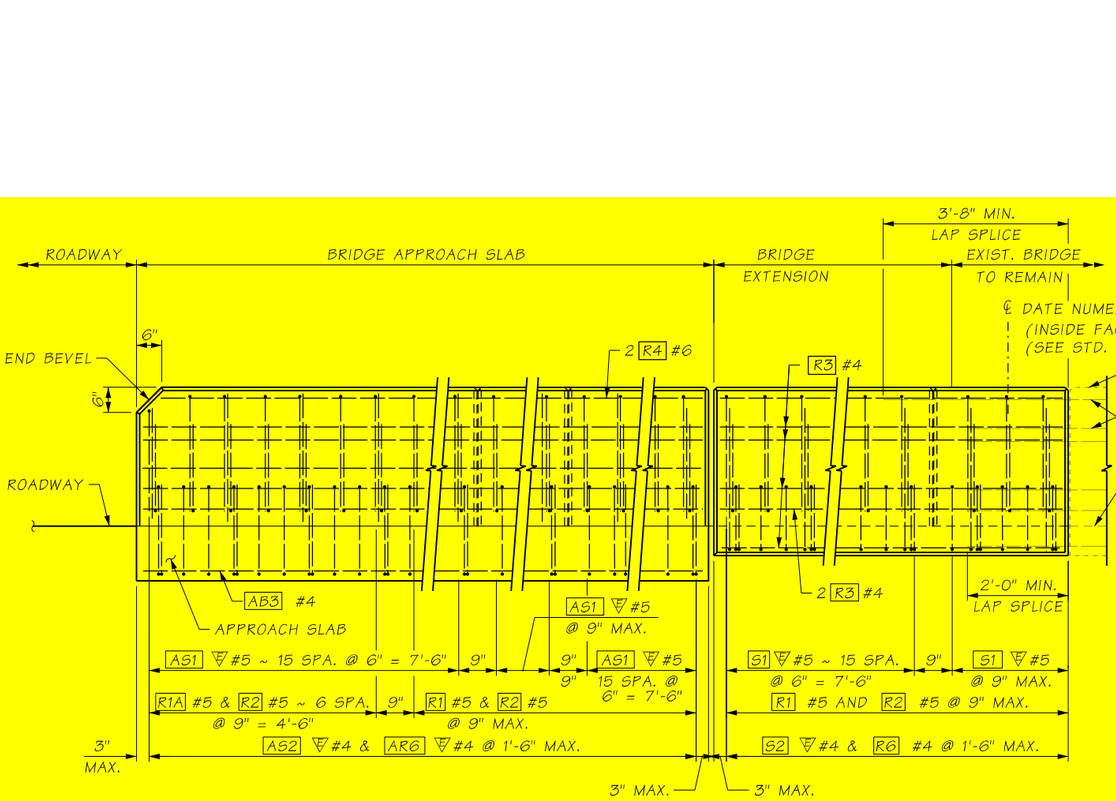
No. _____ Date _____

CHECK PRINT

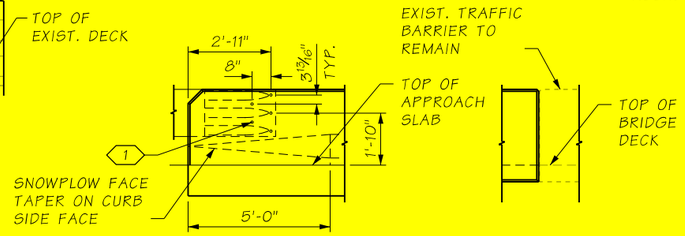
Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date



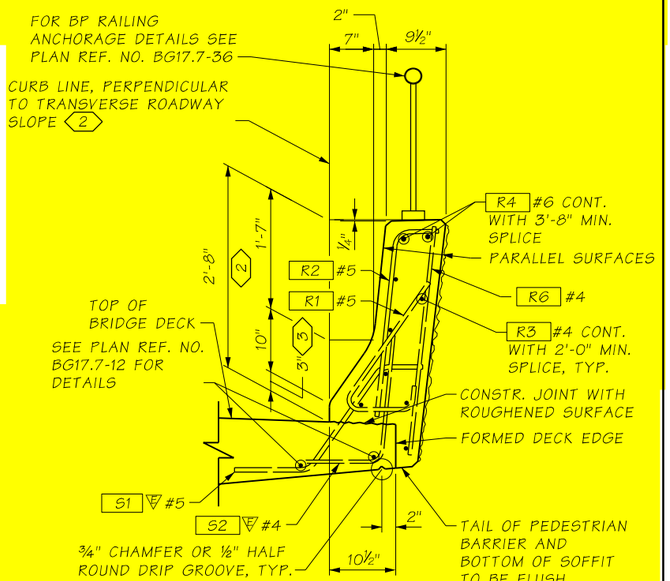
OUTSIDE ELEVATION - END OF TRAFFIC BARRIER



WEST - GUARDRAIL CONNECTION - EAST

THRIE BEAM END SECTION DESIGN "F"
(SEE STD. PLAN C-7a)

OUTSIDE ELEVATION TRAFFIC BARRIER



TYPICAL SECTION TRAFFIC BARRIER

SHOWN ON BRIDGE

NOTES:

1. PROVIDE 5 - ⅞"ø ROCKET/KOHLER F-50, LANCASTER MALLEABLE, OR DAYTON/RICHMOND F-62 FLARED THIN SLAB FERRULE INSERTS OR APPROVED EQUAL, TYP. RESIN-BONDED ANCHORS MAY BE SUBSTITUTED.
2. MIN. HEIGHT. TRAFFIC BARRIER HEIGHT MAY VARY IF REQUIRED TO PROVIDE A SMOOTH PROFILE.
3. TOE HEIGHT MAY VARY, 2" MIN. TO 6" MAX. MATCH EXISTING BARRIER AT TIE-IN.
4. REMAINING REINFORCING SHALL BE CLEANED BEFORE NEW CONCRETE IS PLACED.

FILE NO. 9242 SHEET
I-405

c:\users\jagn\documents\projectwise\workingdir\wsdot\dms22941\XL5467_29_DE_BG_BG17.7-Barrier2.dgn

Design Mgr:	BRIAN BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	F.C. CAJAS				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	M. AASAL								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/2/2021								
Time:	10:18:45 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49064 — PROFESSIONAL ENGINEER
DATE
E.O.R. 1 STAMP BOX

DATE
E.O.R. 2 STAMP BOX

Washington State Department of Transportation
FLATIRON LANE
wood. COWI

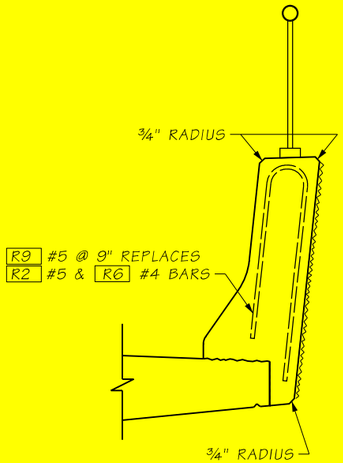
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

BARRIER DETAILS 2 OF 4

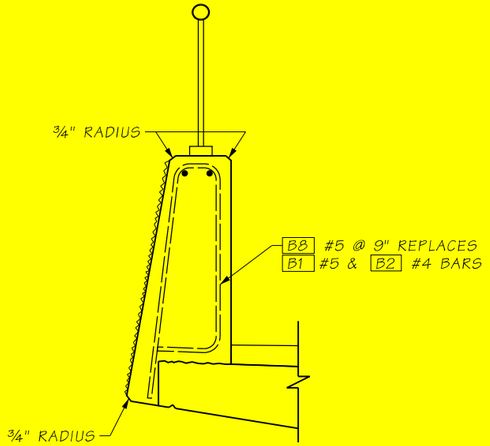
PLAN REF. NO. BG17.7-29

SHEET OF SHEETS



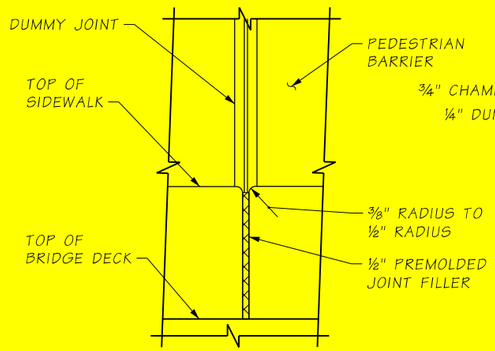
SLIPFORM ALTERNATE TRAFFIC BARRIER

SEE TYPICAL SECTION - TRAFFIC BARRIER FOR ADDITIONAL DETAILS (1)



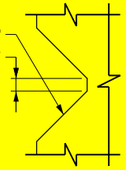
SLIPFORM ALTERNATE PEDESTRIAN BARRIER

SEE TYPICAL SECTION - PEDESTRIAN BARRIER FOR ADDITIONAL DETAILS (1)

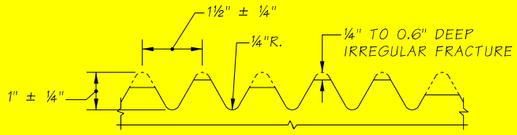


SIDEWALK JOINT DETAIL

SIDEWALK REINFORCING STEEL NOT SHOWN FOR CLARITY
NORTH PEDESTRIAN BARRIER ONLY



DUMMY JOINT DETAIL



FRACTURED FIN FINISH

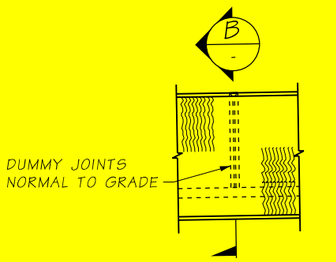
NOTES:

1. THE CONTRACTOR IS ADVISED THAT THE SLIPFORM CONSTRUCTION METHOD IS A PATENTED PROPIETARY PROCESS FOR BARRIERS WITH A FRACTURED FIN FINISH.
2. JUNCTION BOX LOCATION SHOWN IS APPROXIMATE. CENTER JUNCTION BOX INSTALLATION BETWEEN BARRIER DUMMY JOINTS.
3. INSTALL ALL CONDUIT RUNS TO DRAIN TO A BRIDGE END OR PROVIDE DRAIN AT ALL LOW POINTS IN CONDUIT RUN ON BRIDGE.

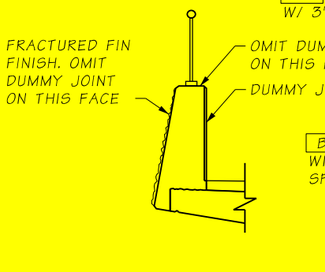
JUNCTION BOX LOCATIONS (PEDESTRIAN BARRIER)

STATION	OFFSET	"ITS" OR "LT"	
15+06.5	-20.5	LT	2

LT = LIGHTING SYSTEM 3

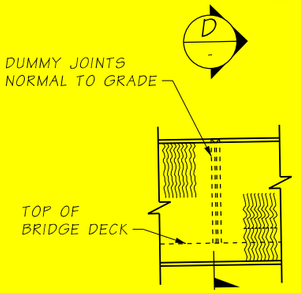


VIEW A 28

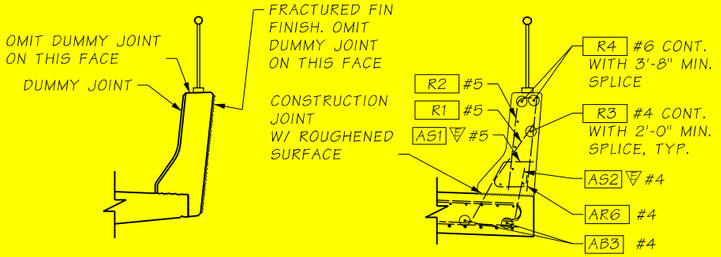


SECTION B - BRIDGE DECK

SECTION B - APPROACH SLAB

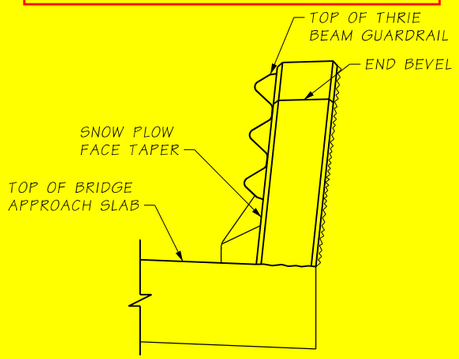


VIEW C 29



SECTION D - BRIDGE DECK

SECTION D - APPROACH SLAB



TRAFFIC BARRIER END VIEW

GUARDRAIL "D" CONNECTION (SEE STD. PLAN C-24.10)

No. _____ Date _____

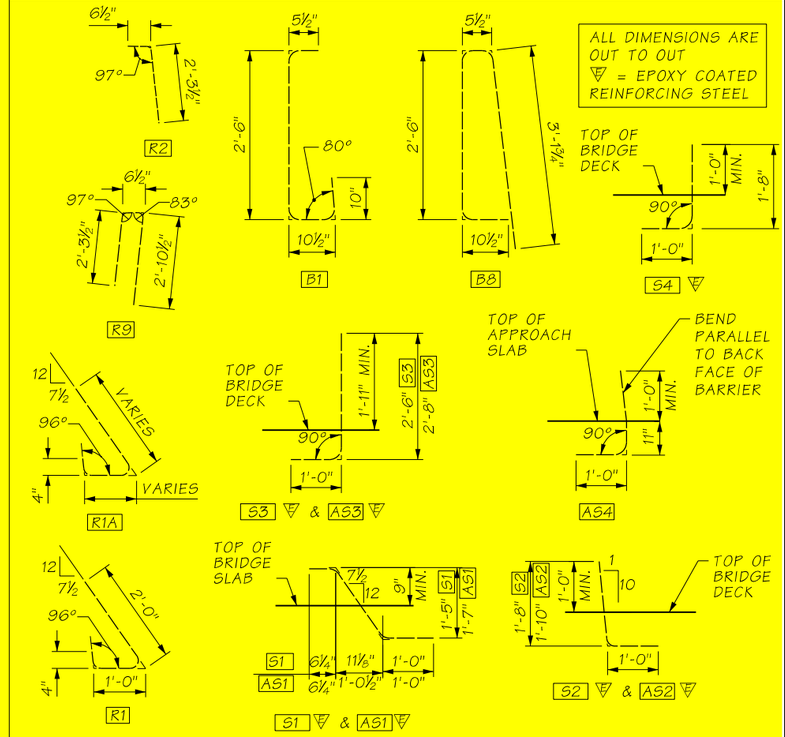
CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	

BENDING DIAGRAM



ALL DIMENSIONS ARE OUT TO OUT
▽ = EPOXY COATED REINFORCING STEEL

c:\users\jagn\documents\projectwise\workingdir\wsdot\dms22941\XL5467_30_DE_BG_BG17.7-Barrier3.dgn

Design Mgr:	BRIAN BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	F.C. CAJAS				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	K. BUNGER								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/2/2021								
Time:	10:54:23 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49064 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

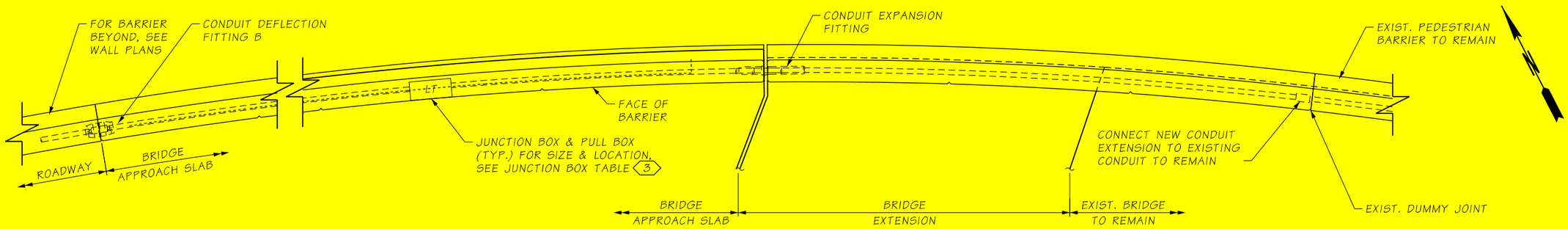
BRIDGE 405/17.7 - RENTON AVE OVER I-405

BARRIER DETAILS 3 OF 4

PLAN REF. NO. BG17.7-30

SHEET OF SHEETS

I-405 FILE NO. 9242 SHEET



PLAN
CONDUITS & J-BOX IN PEDESTRIAN BARRIER

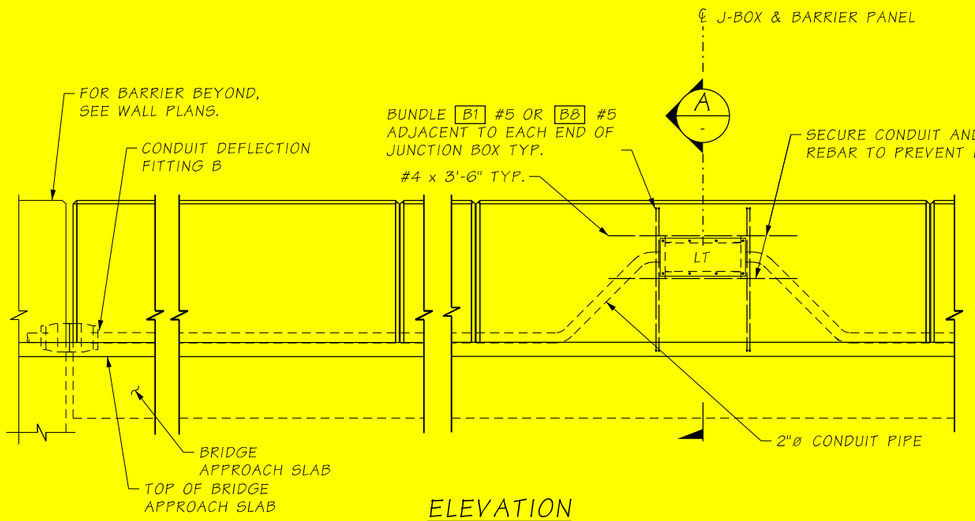
No. _____ Date _____

CHECK PRINT

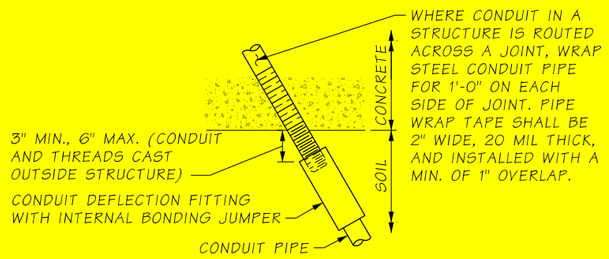
Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	

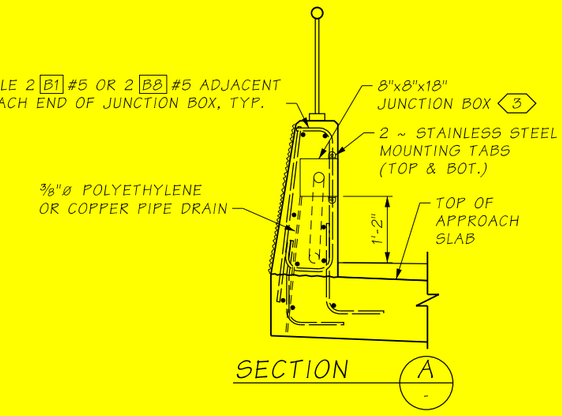


ELEVATION
CONDUITS & J-BOX IN PEDESTRIAN BARRIER
2

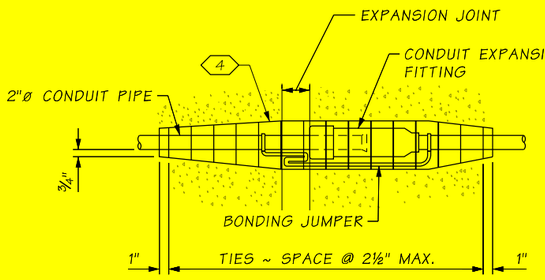


CONDUIT DEFLECTION FITTING A

CONDUIT FITTING - TYPE DX FOR DEFLECTION OF 30° & ¾" MOVEMENT. PLACE AT CONDUIT PIPE EXIT FROM STRUCTURE AND SHALL BE IN NEUTRAL STATE AFTER INSTALLATION

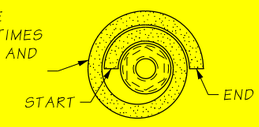


SECTION A

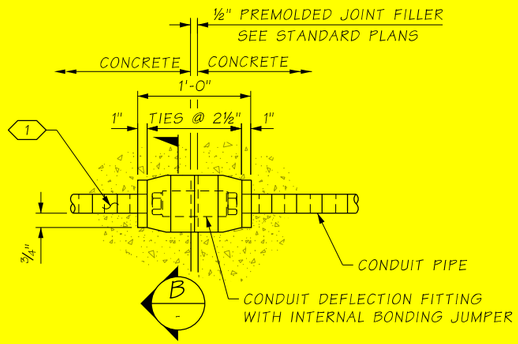


CONDUIT EXPANSION FITTING

CONDUIT FITTING - (TYPE AX FOR MOVEMENT OF ± 2") AT BRIDGE EXPANSION JOINTS



SECTION B



CONDUIT DEFLECTION FITTING B

CONDUIT FITTING - TYPE DX FOR DEFLECTION OF 30° AND A 3/4" MOVEMENT.

NOTES:

1. WHERE CONDUIT IN A STRUCTURE IS ROUTED ACROSS A JOINT, WRAP STEEL CONDUIT PIPE FOR 1'-0" ON EACH SIDE OF JOINT. PIPE WRAP TAPE SHALL BE 2" WIDE 20 MIL THICK, AND INSTALLED WITH A MINIMUM OF 1" OVERLAP.
2. LABEL JUNCTION BOX COVER IN ACCORDANCE WITH STANDARD SPECIFICATION SECTION 9-29.2(4).
3. NEMA 4X IN STATIONARY FORM BARRIER, OR NEMA 3R IN SLIP FORM BARRIER. MOUNT JUNCTION BOX SO COVER IS FLUSH WITH BARRIER, CAN BE RECESSED UP TO ⅛".
4. 3'-0" LONG EXPANDED POLYSTYRENE SLEEVE AROUND CONDUIT. DUCT TAPE SEAMS AND ENDS TO SEAL AND PREVENT CONCRETE FORM BONDING WITH FITTING AND CONDUIT.

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_31_DE_BG_BG17.7-Barrier4.dgn

Design Mgr:	BRIAN BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	F.C. CAJAS				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	M. AASAL								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/15/2021								
Time:	9:50:47 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49664 — PROFESSIONAL ENGINEER — STRUCTURAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

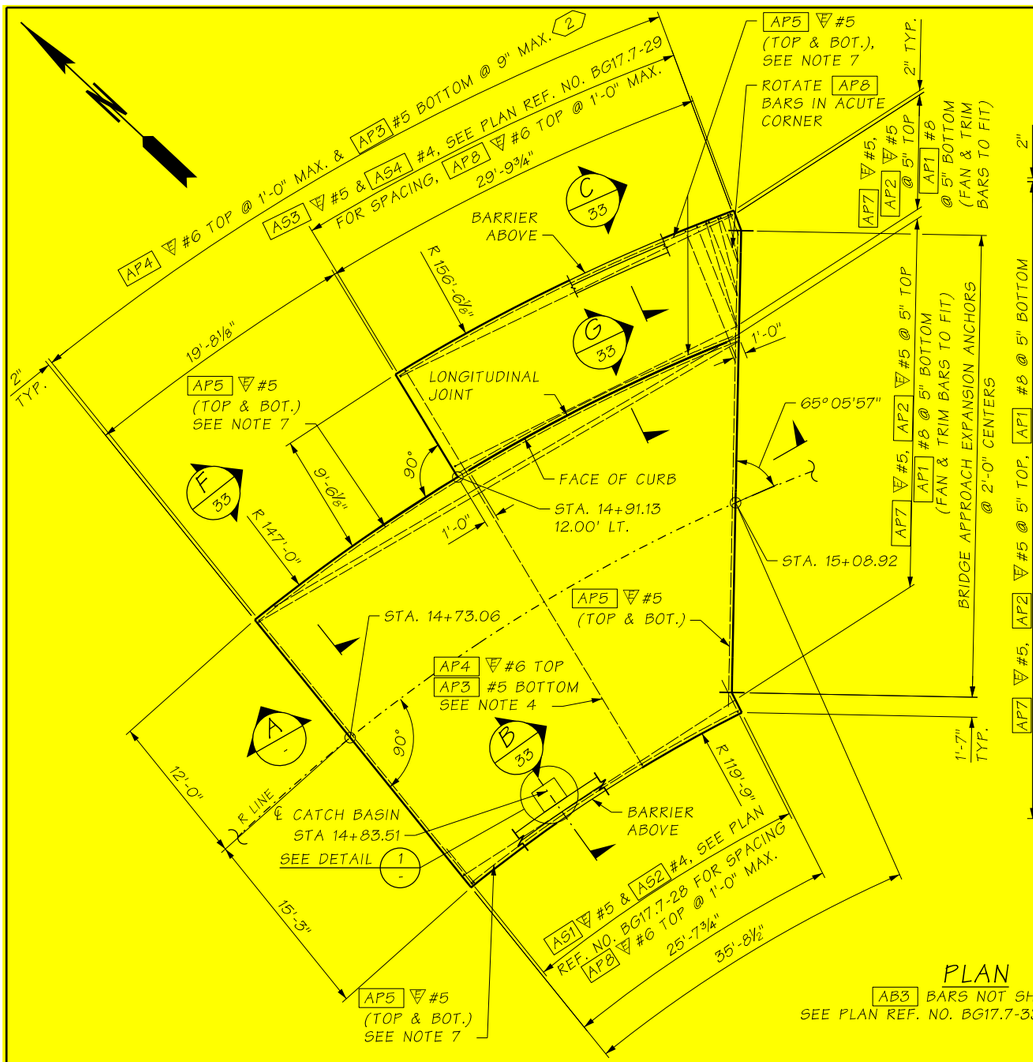
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

BARRIER DETAILS 4 OF 4

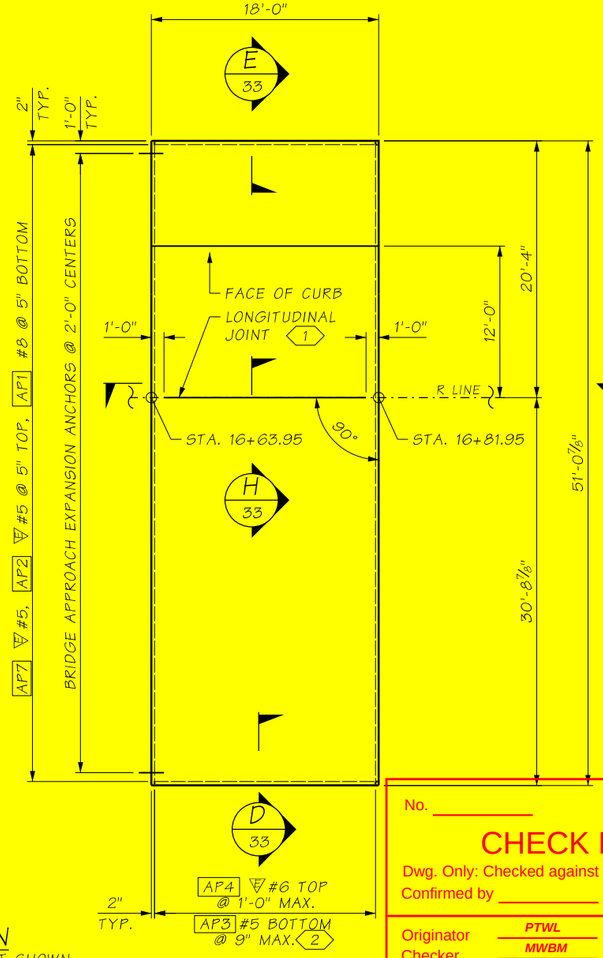
PLAN REF. NO. BG17.7-31

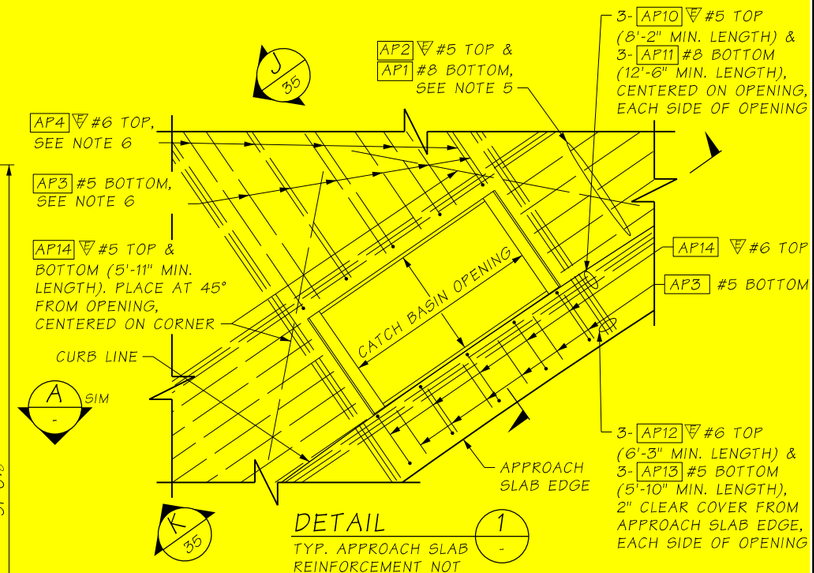
SHEET OF SHEETS



PLAN

AB3 BARS NOT SHOWN.
SEE PLAN REF. NO. BG17.7-33 FOR DETAILS





DETAIL 1 -

TYP. APPROACH SLAB REINFORCEMENT NOT SHOWN FOR CLARITY

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

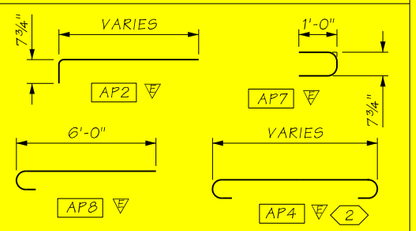
Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

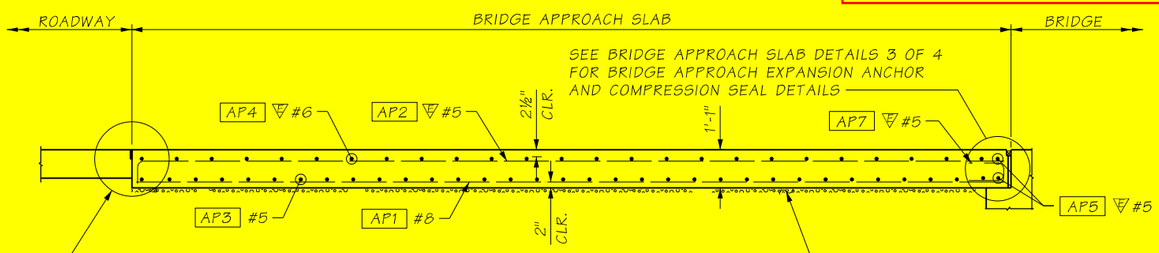
GENERAL NOTES:

1. ALL EDGES OF BRIDGE APPROACH SLAB SHALL HAVE ½" RADIUS EXCEPT AT LONGITUDINAL JOINTS.
2. THE MINIMUM LAP SPLICE OF #5 IS 2'-0", #5 IS 2'-6", #6 IS 3'-0", AND #8 IS 3'-3". ALL LAP SPLICES SHALL BE STAGGERED SO THAT NO MORE THAN 50% OF REBAR IS SPLICED AT THE SAME LOCATION. LAP SPLICES SHALL BE LOCATED WITHIN THE MIDDLE HALF OF THE BRIDGE APPROACH SLAB. OPTIONAL SPLICES ARE ALLOWED FOR AP4 #6.
3. FOR TRAFFIC BARRIER DETAILS, INCLUDING ANY BRIDGE APPROACH SLAB BLOCKOUT INFORMATION, SEE PLAN REFERENCE NO. BG17.7-28 AND BG17.7-29.
4. TRANSVERSE REINFORCEMENT SHALL BE PERPENDICULAR TO ALIGNMENT LINE, EXCEPT AS NOTED.
5. TRIM BARS IN FIELD AS REQUIRED TO MAINTAIN 2" CLEAR COVER AT OPENING. CUT MAXIMUM 6 TOP AND 6 BOTTOM BARS.
6. TRIM BOTTOM BARS IN FIELD AND ADJUST BEND LENGTH OF TOP BARS AS REQUIRED TO MAINTAIN 2" CLEAR COVER AT OPENING. CUT MAXIMUM 5 TOP AND 6 BOTTOM BARS.
7. BEND AP5 #5 BARS TO FOLLOW CURVATURE OF SLAB.

BENDING DIAGRAM



= EPOXY COATED REINFORCING STEEL
NOTE: ALL DIMENSIONS ARE OUT TO OUT



SECTION A -

APPROACH SLAB LENGTHS, AND NUMBER OF AP3 AND AP4 BARS NOT TO SCALE WEST APPROACH SLAB SHOWN, EAST APPROACH SLAB SIMILAR.

NOTES:

1 LONGITUDINAL JOINTS SHALL BE PLACED ON LANE LINES AND SHALL BE CONSTRUCTED AND SEALED IN ACCORDANCE WITH STD. SPEC. SECTION 5-05.3(8). JOINTS MAY BE EITHER A SAWCUT CRACK CONTROL JOINT OR A CONSTRUCTION JOINT. SAWCUT JOINTS SHALL TERMINATE 1'-0" BEFORE REACHING EDGE OF SLAB AND MUST BE SAW CUT AS SOON AS POSSIBLE AFTER PLACEMENT OF CONCRETE. SEE "LONGITUDINAL JOINT DETAIL" ON BRIDGE APPROACH SLAB DETAILS 2 OF 4.

2 AP4 HOOKS ARE ONLY REQUIRED AT APPROACH SLAB EDGES WITH BARRIER.

FILE NO. 9242 SHEET I-405

c:\users\jqgn\documents\projectwise\workingdir\wsdot\dms22941\XL5467_32_DE_BG_BR17.7-ApprSlab1.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	F.C. CAJAS				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	J. GANASSIN								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/2/2021								
Time:	11:08:43 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN STATE OF WASHINGTON 49664 PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

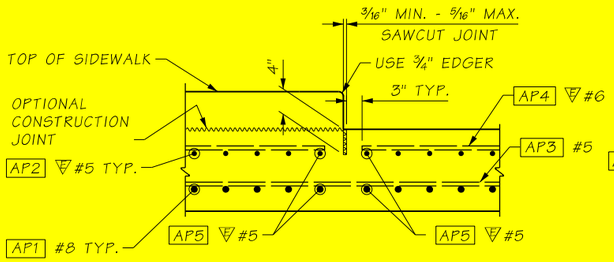
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

APPROACH SLABS 1 OF 4

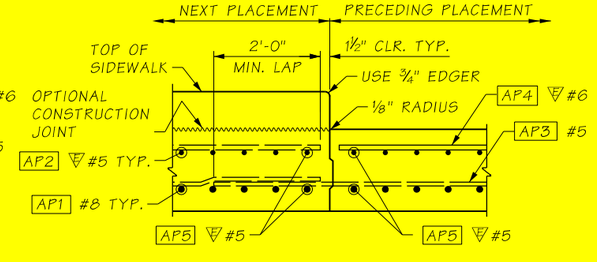
PLAN REF. NO. BG17.7-32

SHEET OF SHEETS



LONGITUDINAL JOINT DETAIL G 32

WEST APPROACH SLAB



ALTERNATE LONGITUDINAL JOINT DETAIL G 32

EDGE PRECEDING PLACEMENT ONLY WITH 1/8" RADIUS
WEST APPROACH SLAB

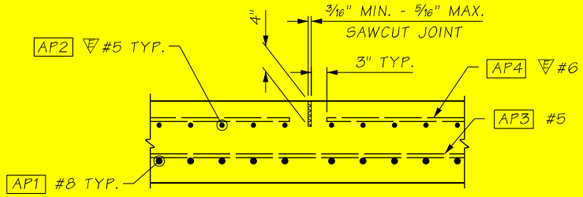
No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

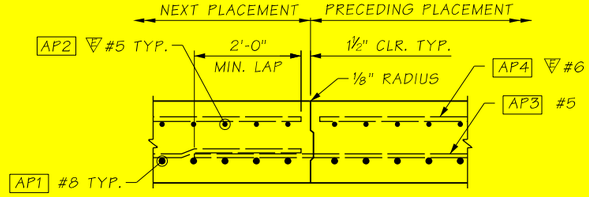
Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date



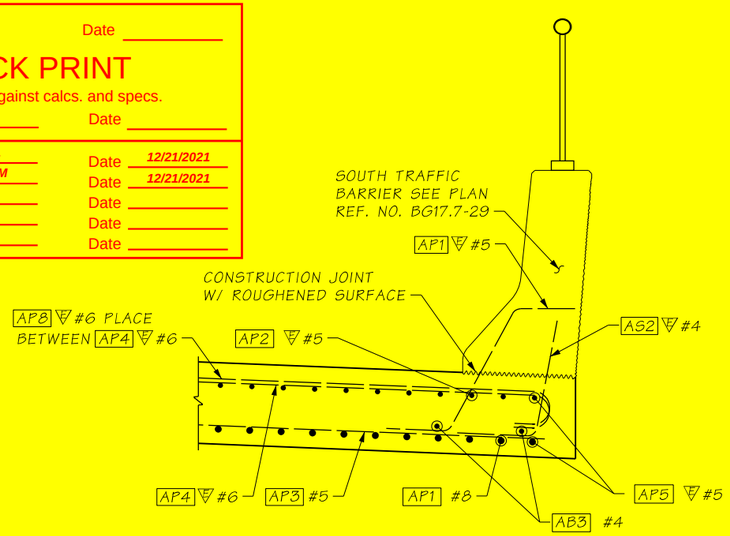
LONGITUDINAL JOINT DETAIL H 32

EAST APPROACH SLAB

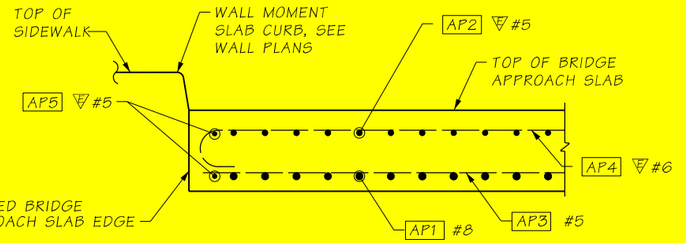


ALTERNATE LONGITUDINAL JOINT DETAIL H 32

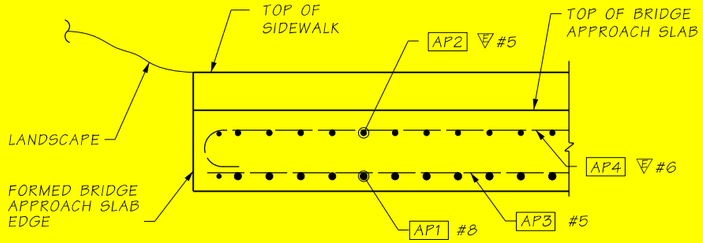
EDGE PRECEDING PLACEMENT ONLY WITH 1/8" RADIUS
EAST APPROACH SLAB



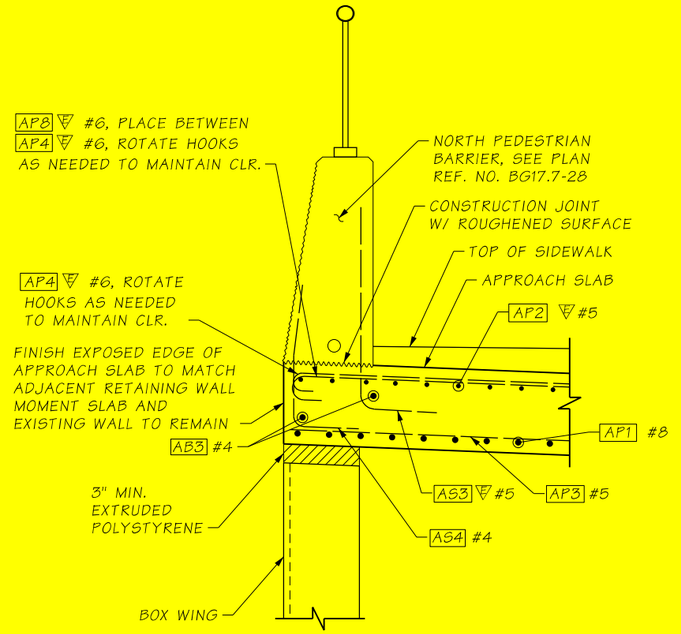
SECTION B 32



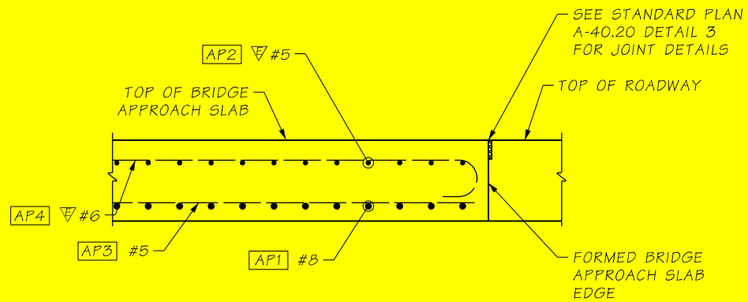
SECTION F 32



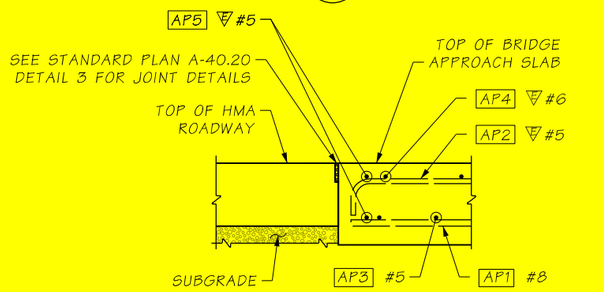
SECTION E 32



SECTION C 32



SECTION D 32



HMA ROADWAY JOINT DETAIL

FILE NO. 9242 SHEET

I-405

c:\users\jagn\documents\projectwise\workingdir\wsdot\dms22941\XL5467_33_DE_BG_BR17.7-ApprSlab2.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD				REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	F.C. CAJAS					10	WASH.			
Checked By:	M. BAUGHMAN					JOB NUMBER XL5467				
Detailed By:	M. AASAL									
Current Revision By:										
Date:	12/2/2021					CONTRACT NO. C9242				
Time:	10:58:14 PM	DESCRIPTION	DATE	NO						

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49664 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

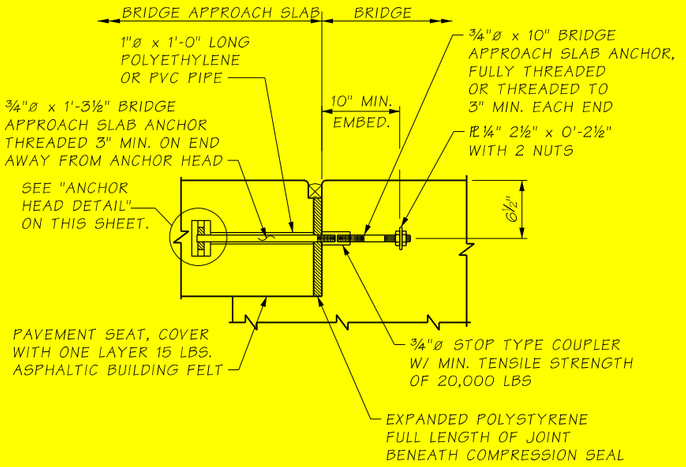
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

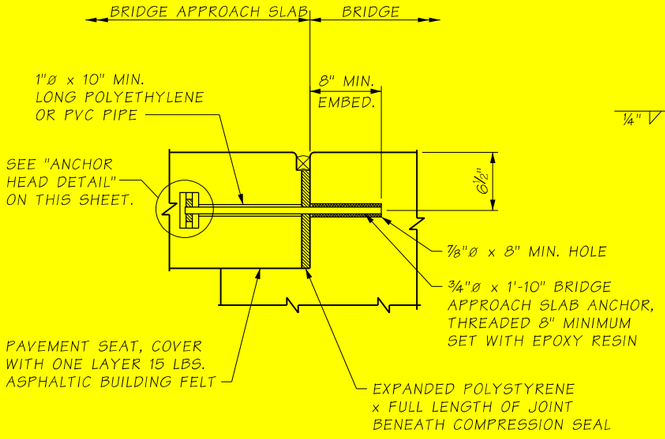
APPROACH SLABS 2 OF 4

PLAN REF. NO. BG17.7-33

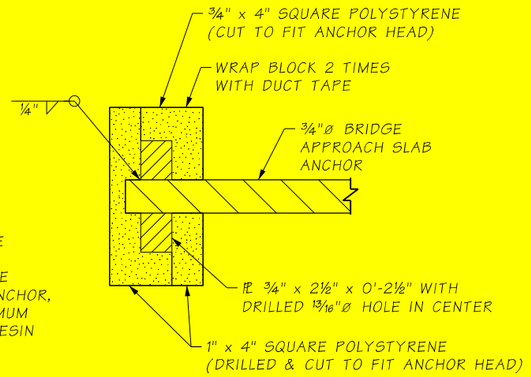
SHEET OF SHEETS



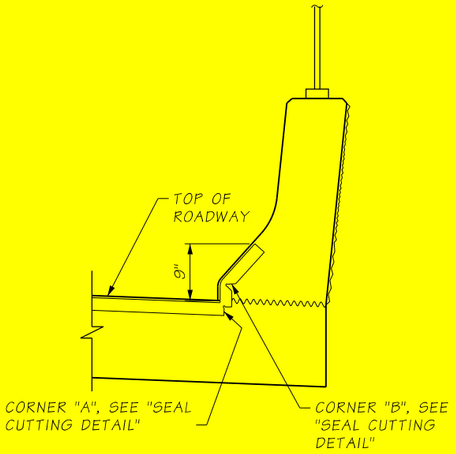
APPROACH EXPANSION ANCHOR - METHOD A



APPROACH EXPANSION ANCHOR - METHOD B

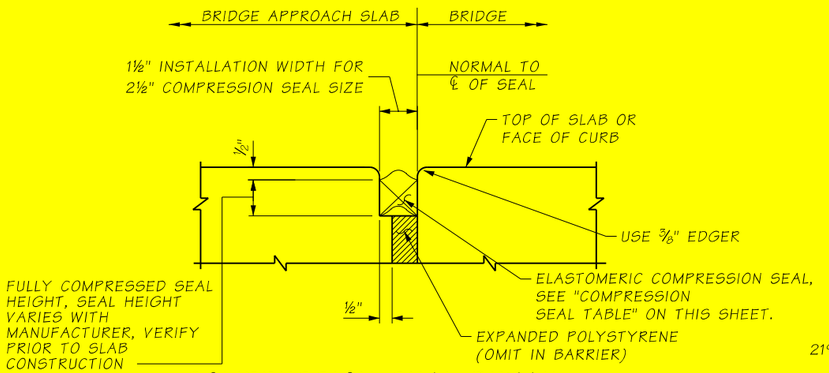


ANCHOR HEAD DETAIL



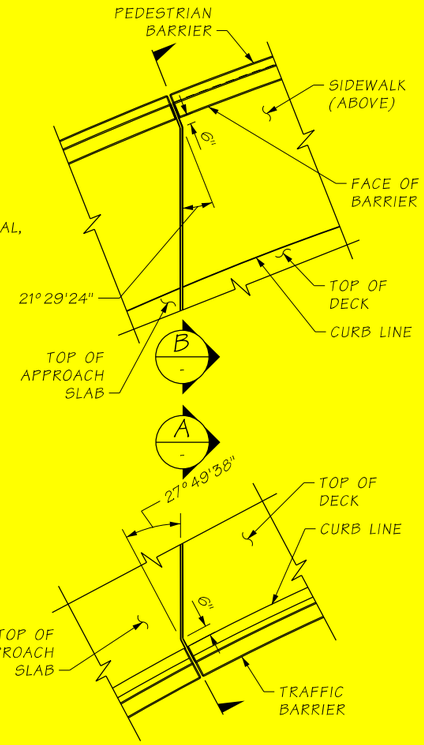
SECTION A

DOES NOT APPLY TO EAST APPROACH SLAB



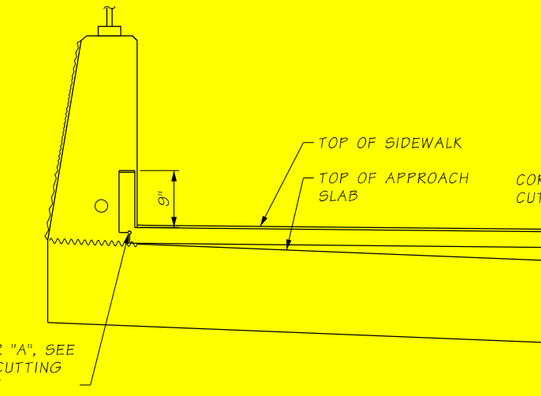
COMPRESSION SEAL DETAIL

EXPANSION JOINT AT BACK OF PAVEMENT SEAT

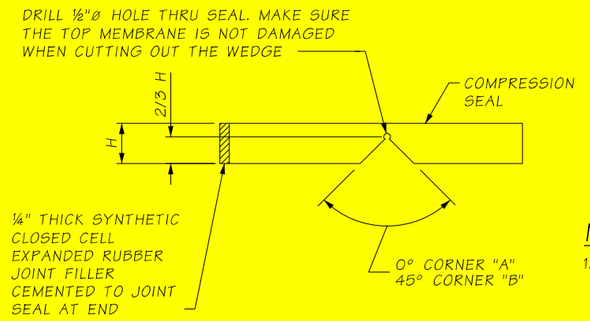


PLAN

EXPANSION JOINT



SECTION B



SEAL CUTTING DETAIL

COMPRESSION SEAL TABLE

D.S. BROWN		WATSON BOWMAN ACME	
SEAL	WIDTH	SEAL	WIDTH
CY-2502	2½	WA-250	2½

TESTING SHALL BE PER ASTM D 2628 PRIOR TO USE.

NOTES:

1. ALL METAL PARTS OF THE APPROACH EXPANSION ANCHOR SHALL RECEIVE ONE COAT OF PAINT CONFORMING TO STANDARD SPECIFICATION SECTION 9-08.1(2)F OR BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232.
2. BRIDGE APPROACH SLAB ANCHORS SHALL BE INSTALLED PARALLEL TO ROADWAY AND TO EACH OTHER.

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date	12/21/2021
Checker	MWBM	Date	12/21/2021
Backchecker		Date	
Updater		Date	
Rechecker		Date	

FILE NO. 9242 SHEET _____

I-405

c:\users\jagn\documents\projectwise\workingdir\wsdot\dms22941\XL5467_34_DE_BG_BR17.7-ApprSlab3.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	F.C. CAJAS				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	M. AASAL								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/2/2021								
Time:	11:13:56 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 39064 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

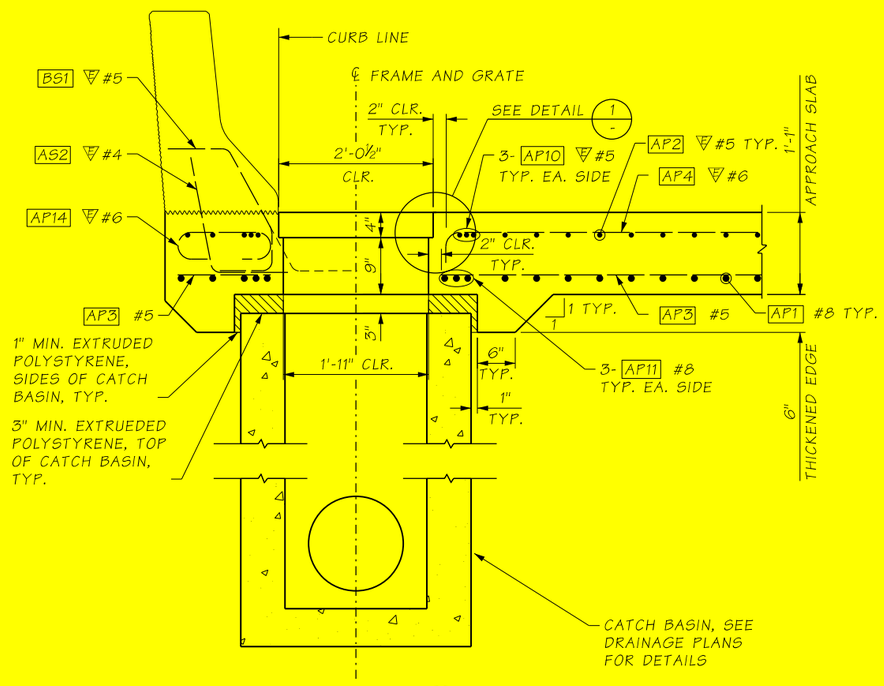
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

APPROACH SLABS 3 OF 4

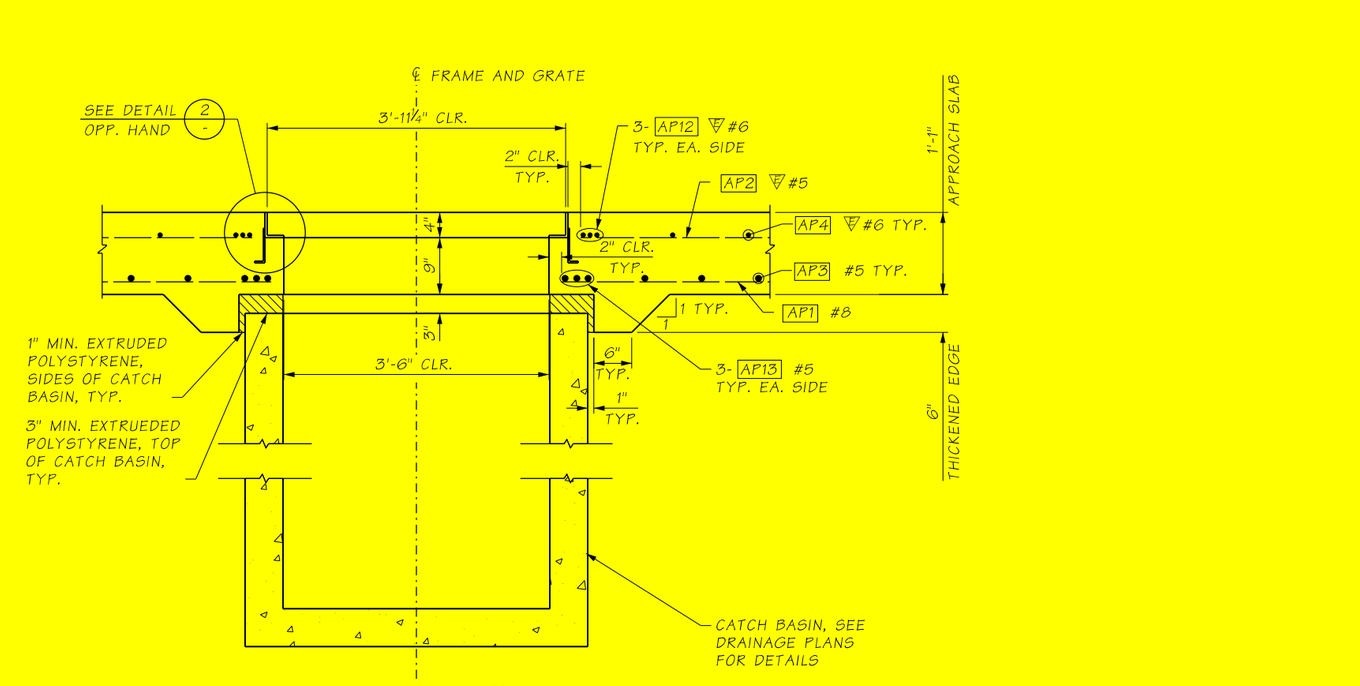
PLAN REF. NO. BG17.7-34

SHEET OF SHEETS

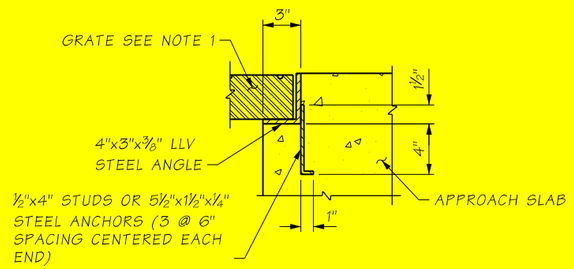


SECTION J 32

DETAIL 1 -



SECTION K 32



DETAIL 2 -

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

NOTES:

1. FOR GRATE DETAILS, SEE WSDOT STD. PLAN B-40.20-00

FILE NO. 9242 SHEET I-405

c:\users\jagn\documents\projectwise\workingdir\wsdot\dms22941\XL5467_35_DE_BG_BR17.7-ApprSlab4.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.
Designed By:	F.C. CAJAS				10	WASH.	
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467		
Detailed By:	M. AASAL						
Current Revision By:					CONTRACT NO. C9242		
Date:	12/2/2021						
Time:	11:21:01 PM	DESCRIPTION	DATE	NO			

SHEET NO. | TOTAL SHEETS

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49664 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

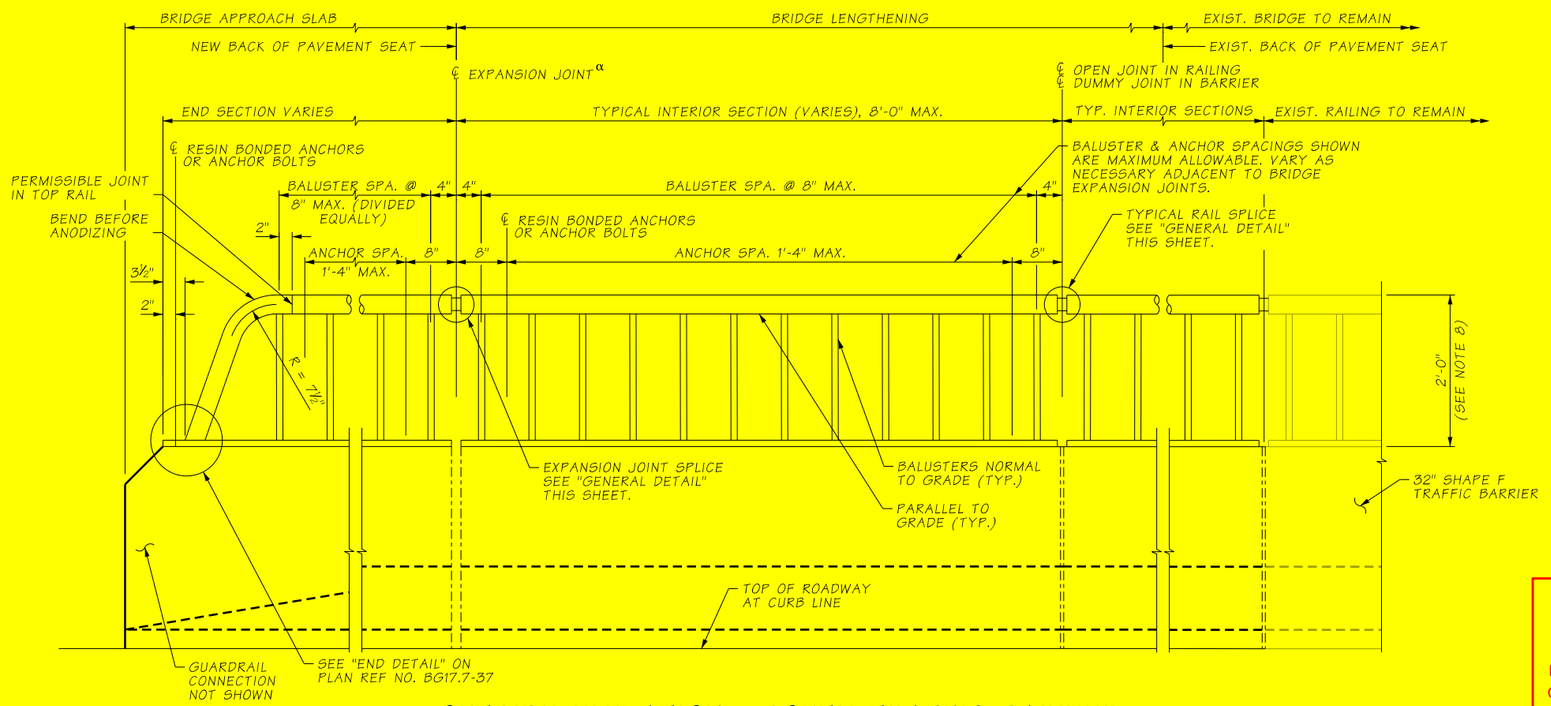
I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

APPROACH SLABS 4 OF 4

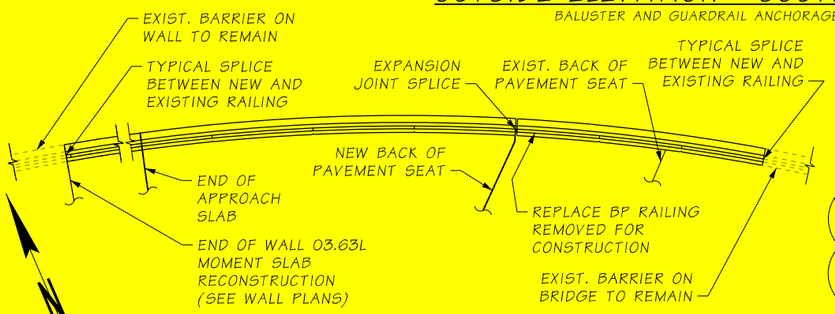
PLAN REF. NO. BG17.7-35

SHEET OF SHEETS

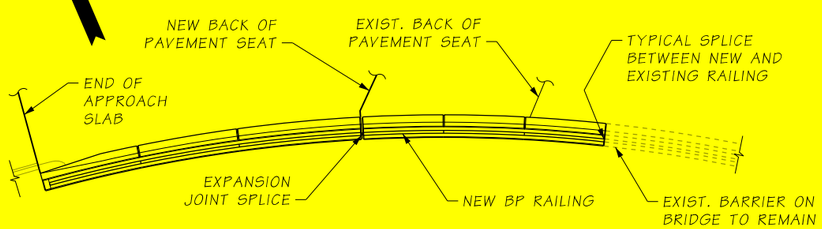


OUTSIDE ELEVATION - SOUTH TRAFFIC BARRIER

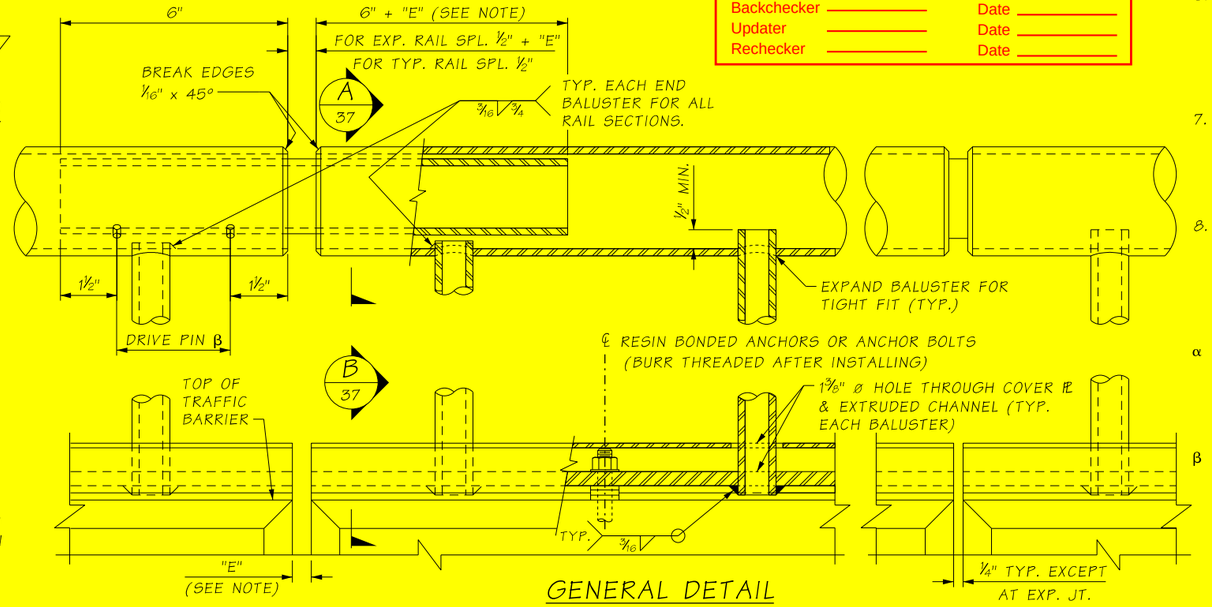
BALUSTER AND GUARDRAIL ANCHORAGE DETAILS NOT SHOWN



PLAN - NORTH PEDESTRIAN BARRIER



PLAN - SOUTH TRAFFIC BARRIER



GENERAL DETAIL

NOTES:

1. PIPE RAILING, PIPE RAILING SPLICES, COVER PLATES AND BOTTOM EXTRUDED CHANNELS SHALL BE BENT TO THE HORIZONTAL CURVE WHERE THE RADIUS OF CURVATURE IS LESS THAN 200'. THESE ITEMS MAY BE HEATED TO NOT MORE THAN 400°F FOR A PERIOD NOT TO EXCEED 30 MINUTES TO FACILITATE FORMING OR BENDING TO HORIZONTAL CURVATURE.
2. SHOP DRAWINGS OF RAILING SHALL BE SUBMITTED AS A TYPE 2 WORKING DRAWING SHOWING COMPLETE DIMENSIONS AND DETAILS OF FABRICATION AND INCLUDING AN ERECTION DIAGRAM. MATERIAL SPECIFICATIONS SHALL BE PROVIDED IN THE SHOP DRAWINGS FOR ALL COMPONENTS.
3. CUTTING SHALL BE DONE BY SAWING OR MILLING AND ALL CUTS SHALL BE TRUE AND SMOOTH. FLAME CUTTING WILL NOT BE PERMITTED.
4. WELDING OF ALUMINUM SHALL CONFORM TO STD. SPEC. SECTION 9-28.14(3).
5. ALL ALUMINUM PARTS SHALL BE GIVEN A CASCADE GREEN ANODIC COATING OF AT LEAST 0.0006" THICK AND SEALED TO MEET THE REQUIREMENTS OF ASTM B 580 WITH A UNIFORM FINISH.
6. PIPE RAILING, PIPE BALUSTERS AND PIPE RAILING SPLICES SHALL BE ADEQUATELY WRAPPED TO INSURE SURFACE PROTECTION DURING HANDLING AND TRANSPORTATION TO THE JOB SITE.
7. CONTRACTOR MAY SUBSTITUTE STEEL RAILING IN ACCORDANCE WITH WSDOT STANDARD DESIGN DRAWINGS 10.5-A7-1 AND 10.5-A7-2 IN LIEU OF ALUMINUM RAILING.
8. BP-24 RAIL DIMENSIONS TO MATCH EXISTING RAILING TO REMAIN. CONTRACTOR TO FIELD VERIFY.

α PROVIDE EXPANSION RAIL SPLICE AT TRAFFIC BARRIER EXPANSION JOINTS. RAIL SPLICE JOINTS ARE TO BE ALIGNED WITH TRAFFIC BARRIER DUMMY JOINTS, TO MATCH EXISTING.

β LOCATE ON OPPOSITE SIDE OF TRAFFIC. DRIVE PINS SHALL BE DRIVEN FLUSH WITH THE OUTSIDE FACE OF THE RAILING.

NOTE:
"E" DIMENSION SHALL BE EQUAL TO OPENING OF TRAFFIC BARRIER EXPANSION JOINTS.

No. _____ Date _____

CHECK PRINT

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_36_DE_BG_BR17.7-Railingl.dgn

Design Mgr:	B. BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	F.C. CAJAS				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	M. AASAL								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/16/2021								
Time:	3:16:20 PM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN — STATE OF WASHINGTON — 49664 — PROFESSIONAL ENGINEER — STRUCTURAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

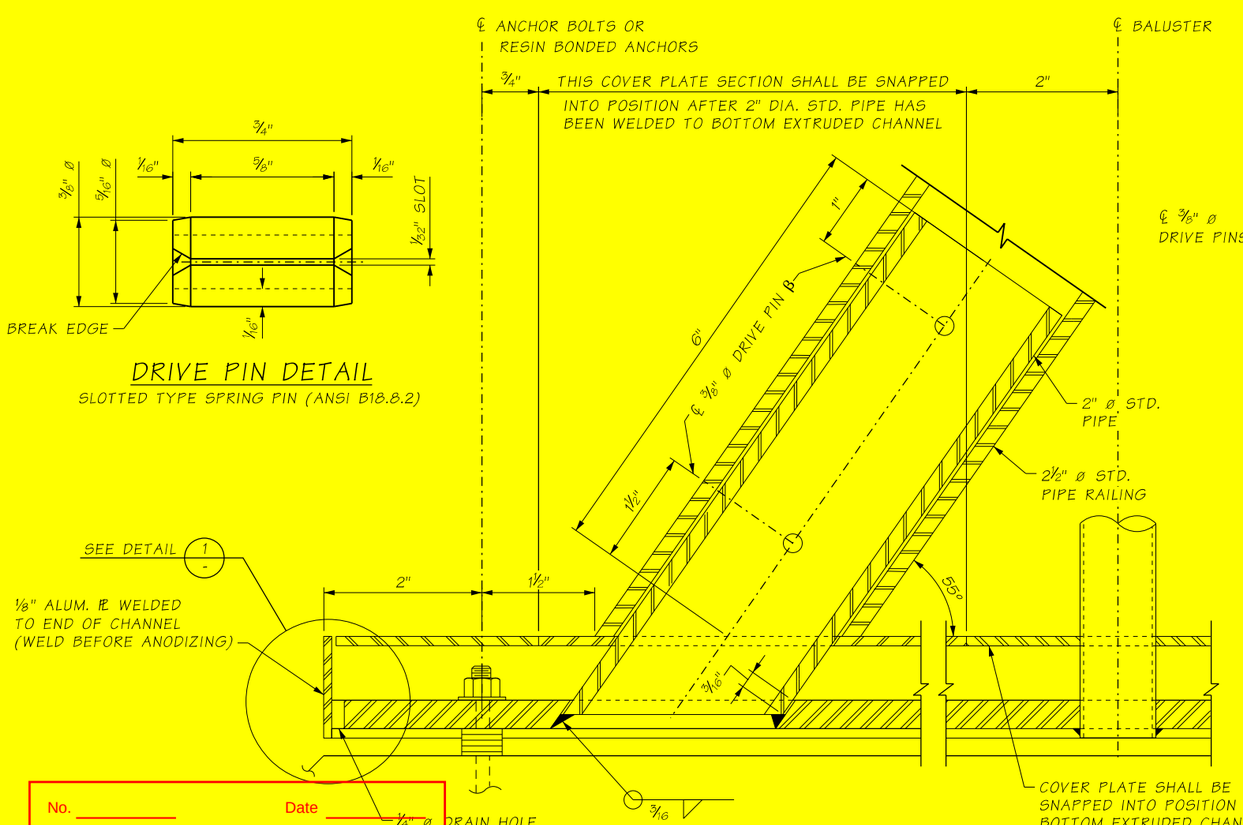
BRIDGE RAILING TYPE BP-24
DETAILS 1 OF 2

PLAN REF. NO. BG17.7-36

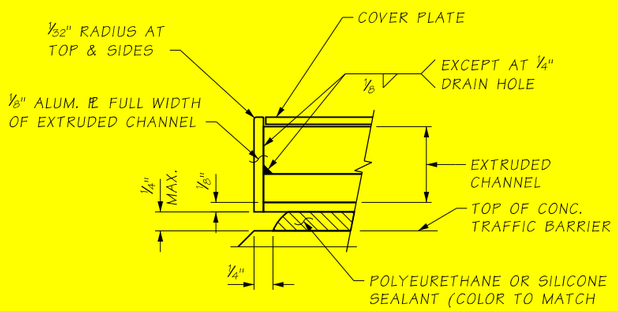
SHEET OF SHEETS

DRIVE PIN DETAIL

SLOTTED TYPE SPRING PIN (ANSI B18.8.2)

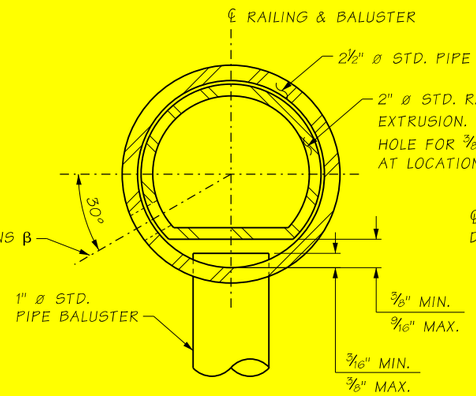


END DETAIL



DETAIL 1 / -

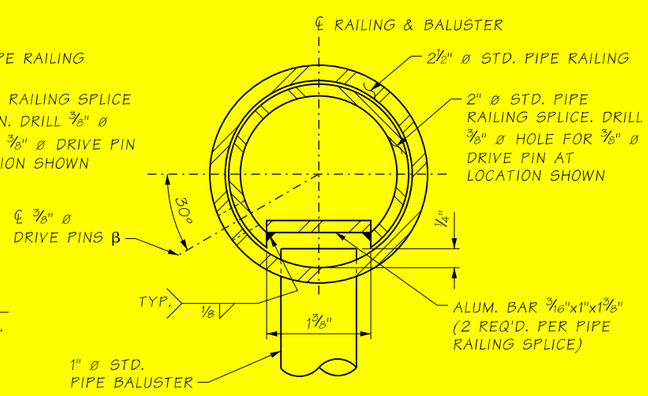
DRAIN HOLES NOT SHOWN



SECTION A / 38

OPTION 1

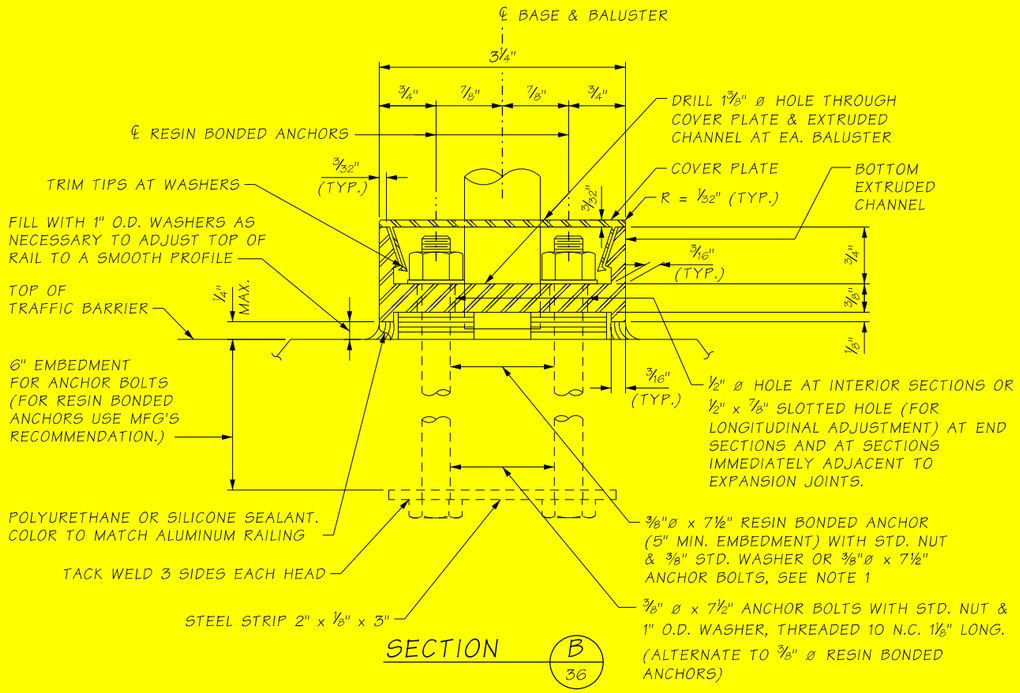
β LOCATE ON OPPOSITE SIDE OF TRAFFIC. DRIVE PINS SHALL BE DRIVEN FLUSH WITH THE OUTSIDE FACE OF THE RAILING.



SECTION A / 38

OPTION 2

β LOCATE ON OPPOSITE SIDE OF TRAFFIC. DRIVE PINS SHALL BE DRIVEN FLUSH WITH THE OUTSIDE FACE OF THE RAILING.



SECTION B / 36

ANCHOR BOLTS SHALL BE POSITIONED IN A JIG DURING WELDING

NOTES:

1. RESIN BONDED ANCHORS SHALL CONFORM TO SECTION 6-02.2.0PT1.GR6 OF THE GENERAL SPECIAL PROVISIONS IN APPENDIX B3 OF THE CONFORMED RFP.

CHECK PRINT

No. _____ Date _____

Dwg. Only: Checked against calcs. and specs.

Confirmed by _____ Date _____

Originator	PTWL	Date 12/21/2021
Checker	MWBM	Date 12/21/2021
Backchecker		Date
Updater		Date
Rechecker		Date

MAT'L	PART	MATERIAL SPECIFICATION
ALUMINUM	RAILS & BALUSTERS	ASTM B221-6005-T5, 6005A-T5 OR ASTM B241-6061-T6
	EXTRUDED CHANNELS, COVER PLATES & BAR	ASTM B221-6005-T5 OR 6005A-T5
	STRIP	ASTM B221-6005-T5
STEEL	ANCHOR BOLTS, NUTS & WASHERS	STANDARD SPECIFICATION SECTION 9-06.5(4) GR. 36 (GALVANIZE IN ACCORDANCE WITH AASHTO SPECIFICATION M 232)
	DRIVE PINS	ASTM A276 OR A240 TYPE 302 STAINLESS STEEL

FILE NO. 9242 SHEET I-405

c:\users\mkal\documents\projectwise\workingdir\wsdot\dms22941\XL5467_37_DE_BG_BR17.7-Railing2.dgn

Design Mgr:	BRIAN BELL	RELEASE FOR CONSTRUCTION RECORD			REGION NO.	STATE	FED. AID. PROJ. NO.	SHEET NO.	TOTAL SHEETS
Designed By:	F.C. CAJAS				10	WASH.			
Checked By:	M. BAUGHMAN				JOB NUMBER XL5467				
Detailed By:	M. AASAL								
Current Revision By:					CONTRACT NO. C9242				
Date:	12/20/2021								
Time:	11:38:38 AM	DESCRIPTION	DATE	NO					

MATTHEW D. BAUGHMAN STATE OF WASHINGTON 49064 PROFESSIONAL ENGINEER

DATE

E.O.R. 1 STAMP BOX

DATE

E.O.R. 2 STAMP BOX

Washington State Department of Transportation

FLATIRON LANE

wood. COWI

I-405; RENTON TO BELLEVUE WIDENING AND EXPRESS TOLL LANES PROJECT

BRIDGE 405/17.7 - RENTON AVE OVER I-405

BRIDGE RAILING TYPE BP-24
DETAILS 2 OF 2

PLAN REF. NO. BG17.7-37

SHEET OF SHEETS